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Monthly Message

An Arabic translation of the Hippocratic Oath by Ibn abi Usaybia, who died in 1269, is presented in its English equivalent.

THE TEXT OF THE COVENANT LAID DOWN BY HIPPOCRATES

Hippocrates said: I swear in the name of God, the Master of life and death, the Giver of Health and Creator of healing and of every treatment, and I swear in the name of Aesculapius, and of all the holy ones of God, male and female, and I call them to witness, that I will fulfill this oath and conditions. I will regard my teacher in this art as my father, I will share with him my means of livelihood, and I will make him my partner in my wealth, and I will give him my wealth whenever he may be in need of it.

As for his descendants, I regard them as my brothers, and I will teach them this art without any remuneration or condition, should they desire to learn it. And I associate together (i. e. regard as equal), in the injunctions and in the sciences and in all else contained in the art, my own children, the children of my teacher, and the disciples on whom the oath (or covenant) has been imposed, and who have sworn to observe the medical code of honour. And I will not do so for any other than these.

In all my treatment I will strive so far as lies in my power for the benefit of the patients. And I will restrain myself from things which are injurious to them, or are likely in my opinion to do them harm. And I will not give them any poisonous drug if they ask for it, nor will I advise them thus. Nor will I contemplate administering any pessary which may cause abortion. And in my treatment and in the practice of my art I will keep myself pure and holy. And I will not operate on those who have stone in the bladder; rather I will leave it for those whose profession it is. And I will enter every abode into which I may go only for the benefit of the sick, being in a state devoid of (all deliberate intention of) wrong-doing, injustice, mischief-making, such as might be intended in other transactions, or in respect of sexual relations with woman or man, whether free or slaves.

And as for the things which I may see or hear during the time of treating the sick, or at times other than those in which I am so engaged, about such behavior of men as should not be talked of outside, I will keep silence, considering that such things should not be discussed.

He who fulfills this oath and does not violate any part of it, to him will it be granted to carry out his treatment and his art under the most excellent and favourable conditions, and to be praised by all men in future for ever; while the contrary will be the portion of him who transgresses it.

Frank B. Berry

FRANK B. BERRY, M. D.
Assistant Secretary of Defense
(Health and Medical)

Table of Contents

Sarcoidosis: Treatment With ACTH and Cortisone—*John Q. Thompson* 157

Myocardial Infarction in a Military Population—*Philip G. Keil and Leon V. McVay, Jr.* 166

Preserved Erythrocytes in Rh Antibody Testing—*Frank W. Chorpenning, Allen A. Young, and Raymond W. Boudreau* 173

Differentiating Bacterial From Viral Pharyngitis and Tonsillitis: A Rapid (Presumptive) Method—*Monroe H. Green* 180

Developments in Social Psychiatry: Observations in Five Selected English Hospitals—*Dennie L. Briggs and Lina Stearns* 184

Operative Results in Lumbar "Disk" Syndrome: Majority of Patients Return to Full Duty—*Gale G. Clark* 195

Oral Lichen Planus and Leukoplakia: Differential Diagnosis and Treatment—*Harry L. Levin* 198

Cutting Characteristics of Dental Burs: As Shown by High-Speed Photomicrography—*Jack L. Hartley, Donald C. Hudson, William T. Sweeney, and Warren P. Richardson* 209

Surgical Treatment of Plantar Corns—*Ben A. Rutledge and Alvin L. Green* 219

CLINICOPATHOLOGIC CONFERENCE

3415th U. S. Air Force Hospital, Lowry Air Force Base, Denver, Colo. 222

SERVICE ARTICLES

Progress in Aeromedical Evacuation—*L. Render Braswell* 235

Psychotics Who Commit Offenses Punishable by Court-Martial: Recommendations for Their Early Diagnosis and Treatment—*Robert L. Nelson* 243

Some Notes on the Historical Development of the Medical Service Corps—*James P. Cooney* 254

CASE REPORTS

Oral Surgery Complications Caused by Flight—*Lucian Szmyd* 264
Priapism of Unknown Cause—*Edward C. Lewis, II, and Benjamin E. Schwarcz* 271
Spontaneous Rupture of the Stomach in Infants—*Marcus W. Moore, Sr.* 275
Kartagener's Syndrome—*Richard Foulk* 279

DEPARTMENTS

A Message From the A. M. A. 285
Deaths 287
The World-Wide Rounds of the Air Force Physician 288
New Air Force Hospital in Libya 289
Officers Certified by Specialty Boards 291
Military Medico-Dental Symposium 293
Medical Officer Elected President of Board of Psychiatry and Neurology 294

BOOKS

Reviews of Recent Books 295
New Books Received 311

Foreword

The *United States Armed Forces Medical Journal* is the medium for disseminating information of administrative and professional interest to all medical personnel of the Department of Defense. The Assistant Secretary of Defense (Health and Medical) and the Surgeons General of the several services invite all medical officers, dental officers, Medical Service Corps officers, Nurse Corps officers, and officers of the Veterinary Corps of the Armed Forces, and the medical consultants of the Army, Navy, and Air Force to submit manuscripts for publication in this *Journal.*

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UNITED STATES ARMED FORCES MEDICAL JOURNAL

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SARCOIDOSIS

Treatment With ACTH and Cortisone

JOHN Q. THOMPSON, *Major, MC, USA*

ALTHOUGH various medications have been employed, there is no known satisfactory treatment for sarcoidosis. Controversial results have been reported from the use of corticotropin (ACTH) and cortisone. In 1950, Thorn and his co-workers[1] mentioned that a patient with sarcoidosis did not improve with ACTH therapy. Their findings prompted Sones and associates[2] to publish a preliminary report proclaiming the favorable response of patients with sarcoidosis to ACTH. Subsequently, several reports on the treatment of sarcoidosis with the steroid hormones have appeared in the literature, and the majority of these publications indicate that these drugs exert a favorable effect on the course of the disease.[3-12]

By reporting 11 additional cases of sarcoidosis treated with ACTH and/or cortisone, we hope to aid in the evolutionary evaluation of an obscure disease treated with little understood compounds. The 11 cases represent a range in manifestations from apparent pulmonary disorders with no subjective symptoms to incapacitating symptoms of various types.

CLINICAL INVESTIGATION

The study concerned patients with sarcoidosis who were admitted to this hospital during the period 1952 to 1954. Only those patients who showed no improvement, or who showed an increase in sarcoid manifestations while on a regimen of bed rest, were chosen for steroid hormone therapy. (These patients remained on bed rest while undergoing diagnostic studies.) In each instance,

From U. S. Army Hospital, Camp Pickett, Va. Dr. Thompson is now with the Department of Internal Medicine of the Scott and White Clinic, Temple, Tex.

a complete case history and physical examination were recorded. Any suggestion of tuberculosis, diabetes mellitus, cardiovascular-renal disease, or neuropsychiatric abnormality which might contraindicate the use of the steroid hormones was noted. Routine clinical investigation included a complete hematologic examination plus determinations for chemical constituents as serum proteins (with albumin-globulin ratio), blood urea, blood glucose (fasting), and serum calcium; urinalysis; a roentgenogram of the chest; and a biopsy of all organs suspected of having sarcoid involvement. When indicated, bone marrow and cerebrospinal fluid examinations and specific tests for liver and renal function were done. For most patients, an ophthalmoscopic examination was performed by a qualified ophthalmologist.

Table 1 gives brief historical and diagnostic data for the series of 11 male patients. Nine patients were Negroes and two were white. Ages ranged from 21 to 35 years. Although one patient (case 8) denied any symptoms, subjective symptoms varied with organ involvement. All patients had some pulmonary manifestations (mediastinal lymph nodes, parenchymal involvement, or both), but predominant chest complaints were recorded in only three instances.

The final diagnosis was based upon the clinical picture, characteristic roentgen appearance of the lungs, hyperglobulinemia, and biopsy specimens showing tissue changes consistent with sarcoidosis. Although the biopsy specimens revealed normal tissue, the clinical picture and roentgen appearance of the lungs were so typical of sarcoidosis in three patients that the diagnosis was considered justified. Certainly in the diagnosis of sarcoidosis, reliance should be placed on biopsy specimens whenever possible; however, as explained by Sones and associates[2] and Israel and Sones,[3,13] the character of the sarcoid granuloma is nonspecific and the microscopic demonstration of epithelioid tubercles in surgically excised specimens is, in itself, not sufficient to establish a diagnosis.

TREATMENT

In order to individualize treatment, no particular rule was established for selecting ACTH or cortisone therapy. In general, a daily dosage of 25 mg of ACTH in 1,000 ml of 5 per cent glucose was administered intravenously over an eight-hour period. Cortisone (300 mg on the first day, 200 mg on the second day, and 100 mg daily thereafter) usually was administered intramuscularly. Hormone therapy was continued until a response was obtained or it became evident that no response would occur. Then cessation of therapy was by gradual reduction of the dosage. Patients were given a regular diet with no added salt. Supplementary potassium was not prescribed routinely. Patients were weighed daily, and daily blood pressure determinations were made.

Table 2 shows the established duration of illness prior to the institution of ACTH and cortisone therapy and the duration and results of treatment. The length of the treatment period was based chiefly on the degree of the patient's response; those patients whose response was slight or partial received continued medication in an attempt to effect further regression. When it became evident that no further improvement was likely to result, treatment was discontinued.

Ten of the 11 patients treated with ACTH and steroid hormones showed some definite signs of improvement. (Improvement was based on roentgen demonstration of prompt and/or definite regression of pulmonary lesions, or by definite diminution in some of the objective manifestations of sarcoidosis.) When improvement occurred, it usually was evident within a week. In many instances, response was so prompt that it seemed to be a significant factor in differentiating the results of treatment from a natural remission. Also, it was observed that recurrences or recrudescences often were evident as soon as 30 days after the cessation of therapy. Impressions gained from the very short-term periods of observation indicated that pulmonary parenchymal and lymph node involvement seemed to recur early; whereas, ocular lesions and parotid and lacrimal gland involvement seemed to show more sustained improvement. Some patients received a second course of therapy.

No attempt was made to compare the effects of ACTH versus cortisone therapy. In case 4, it seemed that no reaction whatever was obtained from ACTH; however, the patient did improve with cortisone therapy. No studies were performed to ascertain if an adrenocortical response to ACTH was obtained.

One patient (case 11) received the largest total dosage of cortisone, but no objective signs of improvement or of progression were observed. Chloroquine phosphate, para-aminosalicylic acid (PAS), and streptomycin sulfate were administered also.

Case 3 was interesting because it seemed that this patient's symptoms of polydipsia and polyuria might represent sarcoid involvement of the pituitary gland. ACTH therapy was administered, and the patient showed marked subjective improvement with roentgenographic evidence of regression of his pulmonary lesions but no regression of the symptoms of diabetes insipidus. Although ACTH did not alleviate the diabetes insipidus, he was maintained on Pitressin (brand of posterior pituitary pressor and antidiuretic hormone). Unfortunately, as with all of the cases studied, prolonged follow-up information was impossible.

Two instances of possible toxic reaction deserve consideration. One patient (case 11) developed such marked subjective improvement that the possibility of euphoria (due to cortisone) was believed to be a factor; however, in most patients showing

TABLE 1. *Historical and diagnostic data on 11 male patients with sarcoidosis*

Case	Age (years)	Race	Symptoms	Characteristic lesions*	Site of involvement	Biopsy specimen
1	23	Negro	Hip pain	Parenchyma	Lung tissue Lymph node	Lymph node—characteristic lesions of sarcoidosis
2	23	Negro	Cough Chest discomfort	Parenchyma	Lung tissue Lymph nodes Skin	Lymph node—characteristic lesions of sarcoidosis
3	21	White	Polydipsia Polyuria	Hilar node	Peripheral and hilar lymph nodes Hypophysis?	Lymph node—characteristic lesions of sarcoidosis
4	35	White	Fever Joint pain	Hilar node	Hilar node Liver	Liver—characteristic lesions of sarcoidosis
5	21	Negro	Nausea Vomiting Fever Weakness	Hilar node Parenchyma	Peripheral and hilar lymph nodes Lung parenchyma Liver Eye Parotid, lacrimal and submandibular glands	Liver and lymph node—characteristic lesions of sarcoidosis

TABLE 1. *Historical and diagnostic data on 11 male patients with sarcoidosis*—Continued

Case	Age (years)	Race	Symptoms	Characteristic lesions*	Site of involvement	Biopsy specimen
6	22	Negro	Cough Respiratory difficulty	Parenchyma	Hilar nodes Lung parenchyma Lacrimal and parotid glands	Lymph node—normal
7	24	Negro	Mass in neck	Hilar node Parenchyma	Lymph node Lung parenchyma	Lymph node—characteristic lesions of sarcoidosis
8	27	Negro	None	Hilar node Parenchyma	Lung parenchyma Hilar nodes	Lymph node—normal
9	23	Negro	Swollen, enlarged peripheral lymph nodes	Hilar node Parenchyma	Lung parenchyma Hilar and peripheral lymph nodes	Lymph node—characteristic lesions of sarcoidosis
10	24	Negro	Enlarged inguinal lymph nodes	Parenchyma	Lung parenchyma Peripheral lymph nodes	Lymph node—characteristic lesions of sarcoidosis
11	34	Negro	Fever Malaise Cough	Hilar node	Hilar lymph node	Lymph node—normal

*Demonstrated by roentgenograms of the chest.

TABLE 2. *ACTH and cortisone therapy and results of treatment in 11 male patients with sarcoidosis*

Case	Known duration of illness* (months)	ACTH therapy		Cortisone therapy		Results of treatment**
		Total dosage (mg)	Duration (days)	Total dosage (grams)	Duration (days)	
1	1	445	21			Improved. Partial clearing of pulmonary manifestations.
2	6	310	15			Marked improvement of pulmonary manifestations.
3	4	420	19			Complete clearing of pulmonary manifestations. Marked subjective improvement. (Patient also on Pitressin.)
4	2	450	21	2.0	16	No improvement on ACTH. Remission of pulmonary lesion with marked subjective improvement from cortisone.
5	5	475	19	2.1	21	Moderate improvement of lungs and parotid glands on cortisone. Most marked response was complete clearing of eye lesions from ACTH therapy.
6	3	420	20	1.0	10	Definite improvement of lungs, and parotid and lacrimal glands. Exacerbation of parotid and lacrimal involvement with definite improvement on second course of cortisone, but incomplete clearing of pulmonary manifestations.

TABLE 2. *ACTH and cortisone therapy and results of treatment in 11 male patients with sarcoidosis*—Continued

Case	Known duration of illness* (months)	ACTH therapy		Cortisone therapy		Results of treatment**
		Total dosage (mg)	Duration (days)	Total dosage (grams)	Duration (days)	
7	3			1.2	11	Improved. Definite regression of peripheral lymph nodes and pulmonary manifestations.
8	4			5.0	44	Prompt and marked regression of manifestations, recurring immediately after cessation of therapy.
9	5			4.5	44	Over 50 per cent regression of pulmonary lesions during the first week of therapy, then gradual but not complete regression of peripheral lymph nodes and pulmonary lesions.
10	4			3.8	33	Definite, but not complete, clearing of pulmonary manifestations. Prior to cortisone therapy, this patient had regression of peripheral lymph nodes with stabilization of pulmonary lesions. Cortisone treatment was begun after roentgenographic evidence of progression of pulmonary lesions.
11	8			6.1	41	No improvement. Possibly mild euphoria as a side reaction. This patient also was treated with chloroquine phosphate, streptomycin sulfate, and PAS.

*Prior to treatment.

**Improvement demonstrated by roentgenographic and clinical examinations.

improvement, there was an associated sense of well-being. The other patient (case 6) had an episode of hematemesis during the second course of cortisone therapy. This may have represented a toxic reaction to cortisone, manifested by gastric or duodenal ulceration, or it may have been due to sarcoid involvement of the stomach and/or gastro-intestinal tract.[14,15] Roentgen studies (employing barium) made eight days after the episode of hematemesis failed to demonstrate any abnormality of the stomach or small bowel.

DISCUSSION

Of the various substances employed in the treatment of sarcoidosis, ACTH and the steroid hormones seem to offer the most promise. Although Hodgson and Woolner[16] stated that "most of the good results from therapy are limited to clinical response, with little or no alteration in the x-ray picture of the lungs," there was roentgenographic evidence of very definite regression of the pulmonary manifestations in most of our patients. Other workers have observed histologic changes in lymph nodes. Siltzbach[4] studied 13 post-treatment biopsy specimens from 8 patients and noted slight to marked regressive changes in 10 specimens. Miller and Bass[5] reported a case concerning a patient who had progressive manifestations of sarcoidosis (proved by lymph node biopsy) for two years prior to treatment and response from ACTH. In this case, the lymph node biopsy performed after therapy showed an absence of sarcoid involvement and the presence of extensive hyaline changes. Berger and Relman[6] reported a case of sarcoidosis with renal involvement. Following steroid hormone therapy, their patient showed clinical improvement of pulmonary and lymph node manifestations, but histologic studies of the kidney performed before and after treatment showed no change.

Thorn and associates[1] touched upon several important general considerations concerning the use of ACTH and steroid hormones which still seem to be applicable: (1) The physician employing these agents must possess a sound understanding of the multiple metabolic activities of these hormones; (2) the course of therapy undertaken with these agents must be truly individualized; (3) should the clinical response to ACTH administration be inadequate, the production of an adrenocortical response should be verified; and (4) the decision to employ chronic hormone therapy demands a comparative evaluation of the potential gains and risks involved. On this latter point, Israel and Sones stated: "It is our belief at present that treatment with cortisone is indicated in patients whose sarcoidosis appears to be recent and fresh. Treatment does not appear to be warranted in patients with chronic disease and few symptoms, while a trial of these drugs is advisable in patients with ocular lesions, with pulmonary insufficiency, or other manifestations of progressive disease."[3] Our

limited experience of treatment with these drugs tends to support this belief.

It is worth emphasizing that a diagnosis of sarcoidosis should be well established and differentiated from acute interstitial pulmonary fibrosis prior to the institution of steroid hormone therapy. Peabody and associates[17] reported that withdrawal of these drugs might prove harmful to patients with acute interstitial pulmonary fibrosis (Hamman-Rich syndrome).

SUMMARY

Eleven patients with sarcoidosis were treated with ACTH and/or cortisone. Pertinent clinical and laboratory data were obtained to establish the diagnosis prior to institution of therapy. Ten of the 11 patients treated with steroid hormones showed some definite signs of improvement, although probably temporary. The aim of treatment should be to maintain the patient until a stage of natural remission occurs.

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MYOCARDIAL INFARCTION IN A MILITARY POPULATION

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LEON V. McVAY, Jr., *M. D.*

MYOCARDIAL INFARCTION has a more serious connotation in the military services than in the general population. To maintain a combat-ready force and necessary support elements, physical standards must remain high, and personnel with history of infarction are likely to be considered unfit for active duty.

Master, Jaffe, and Dack[1] estimated in 1939 that over one million myocardial infarctions occurred annually in the United States. Since then there has been a greater increase in the frequency of its occurrence than in the population, and it is reasonable to assume that there is an increased incidence in the armed services.

In the Army and Air Force, an electrocardiogram is required as a part of the annual physical examination of officers 40 years of age and over.* We were surprised in the recent past at the number of men whose initial tracings showed unequivocal evidence of previous infarction. In taking the medical history of these men it was possible to date the attack in approximately half of the cases. This observation provoked our investigation of the problem of myocardial infarction in a military population.

We reviewed the clinical records of patients hospitalized with myocardial infarction at this base during the five-year period, 1951 through 1955 inclusive. We were particularly interested in advanced coronary artery disease in younger persons, and in the retainability of military personnel in the service after infarction.

Attention was focused on coronary artery disease in the young in 1948 by Yater and associates,[2] who reported 866 cases in patients under 40 years of age (18 to 39 years). This was

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Read before the Section on Military Medicine at the annual meeting of the American Medical Association, Chicago, Ill., 11-16 June 1956.

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*Required in the Navy for all flag officers, and for other personnel when indicated.

rather dramatically re-emphasized by Enos, Holmes, and Beyer,[3,4] who reported pathologic studies of the coronary arteries of 200 soldiers killed in Korea. They found coronary disease of significant degree in 77 per cent of these men and severe atherosclerotic change in over 15 per cent. Their average age was 22.1 years; height, 5 feet 7¾ inches; and weight, 145.8 pounds.

In 1937 Benson[5] stated, "This condition is rare under 30 years and relatively uncommon under 40. . . . To those of us who examine men periodically, prophylactically so to speak, to determine their fitness to fly, the early detection of coronary artery disease is a distinct problem." Today coronary artery disease has become much more commonly recognized in the young, but the problem and its solution remain unchanged nearly 20 years after publication of Benson's article.

CLINICAL MATERIAL

One hundred and seven patients who suffered myocardial infarction were hospitalized at this base during the five-year period terminating 31 December 1955. Eighty-seven of these were members of the military service on active duty. The remainder were retired personnel or dependents of active-duty personnel.

Age. Table 1 gives the age distribution of the 107 patients. The age range for military personnel was 24 to 60 years. Of the 9 patients aged 60 to 82 years, 6 were dependents, 1 was retired, and 2 were on active duty.

TABLE 1. *Age distribution of patients with myocardial infarction*

Age group (years)	Civilians		Military personnel		Totals
	Male	Female	Active	Retired	
24-29	0	0	5	0	5
30-39	0	0	30	3	33
40-49	0	2	40	1	43
50-59	2	2	10	3	17
60-69	2	1	2	1	6
70-79	0	2	0	0	2
82	1	0	0	0	1
Total	5	7	87	8	107

Sex, Race, and Status. One hundred and two patients were white and five were Negro. One hundred were male and seven were

female. All of the females were dependents. Eighty-seven were active duty personnel, 8 were retired, and 12 were dependents.

Seasonal Incidence. Most of the infarctions occurred during spring and summer, contrary to many reported series and general belief. The occurrence by months is given in table 2. It was not possible to determine accurately the month of infarction in five of the civilian patients, since the unrecognized infarction had occurred preciously and the patient had been referred to this hospital for treatment of residuals.

TABLE 2. *Month of occurrence of myocardial infarction among 107 patients*

Month	Number of patients	Month	Number of patients
January	3	July	8
February	3	August	15
March	11	September	7
April	16	October	9
May	14	November	3
June	8	December	5
		Unknown	5

Body Build. Body build was determined only on active duty military personnel according to the height-weight standards cited by Duncan.[6] Forty-seven were obese, 28 were within the average range, 7 were underweight, and in 5 this information was lacking. In all patients under 40 years of age, 17 were obese, 14 were average, 4 were underweight, and in 3 this information was unknown.

Angina. Of the 87 persons on active duty, a history of angina was present in 27, absent in 52, and undetermined in 8. In all patients under 40 years of age angina was present in 9, absent in 25, and undetermined in 4.

Hypertension. A moderate degree of hypertension was present in 15, 66 were normotensive, and in 6 this information was not available. In all patients under 40 years of age, 4 were hypertensive, 31 normotensive, and in 3 this information was lacking.

Predisposing Factors. With reference to physical activity at the time of infarction, the following pertains: 20 patients were sleeping, 30 were awake but in a resting state, 19 were mildly to moderately active, 6 were performing strenuous physical exercise, and in 12 this information was lacking. Among all patients under 40 years, 8 were sleeping, 9 were awake in a rest-

ing state, 10 were exerting themselves mildly to moderately, 5 were exerting themselves strenuously, and in 6 this information was unknown.

Family History. Family history was negative in 24 patients, positive in 45, and unknown in 18. Family history was negative in 11 of all the patients under 40 years of age, positive in 20, and unknown in 7. In the individuals under 30, the family history was negative in 1, positive in 3, and unknown in 1.

Type of Infarction. There were 29 posterior myocardial infarctions and 50 anterior infarctions, including septal and lateral; 3 individuals had both anterior and posterior infarctions, and in 5 persons the type was unknown. In all patients under 40, 15 had posterior infarcts, 21 had anterior, 1 had both, and in 1 the type was unknown.

Use of Tobacco. There were only 2 documented nonsmokers in the series. Ten smoked moderately, that is, less than a package per day. Sixty smoked heavily, that is, more than a package per day, and usually one and one half to two packages. In 15, complete information was lacking. In all patients under 40, there were 2 nonsmokers, 9 moderate smokers, 17 who smoked heavily, and in 10 this information was not recorded.

Use of Alcohol. There were 6 patients who did not drink, 50 who drank moderately, 16 who drank heavily, and 15 on whom this information was not recorded. In all patients under 40, 5 were nondrinkers, 20 imbibed moderately, 4 heavily, and in 9 this information was not recorded.

Severity of Infarct. Twelve were classified as mild, 28 moderate, 24 moderately severe, and 23 severe. In all patients under 40, 5 were considered mild, 15 moderate, 11 moderately severe, and 7 severe.

Outcome. Fifty of the 87 military patients were retired from active duty following their initial infarction with disability ratings of from 60 to 100 per cent (average rating 80 per cent). Thirteen military patients died and 24 were returned to active duty. In only one instance was an individual returned to active duty by the Physical Evaluation Board after the Medical Board had recommended retirement. Of the civilian and retired group, 3 retired military personnel and 2 civilians died; 5 retired military personnel and 10 civilians survived.

DISCUSSION

Our primary interest in collecting these data was to investigate the outcome of the cases and find the number of persons who returned to effective military duty. Secondarily we were interested in clinical features, age groups, habitus, habits, et cetera.

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This group varies little from other series as regards mortality, family history, antecedent history of angina, hypertension, body build, and smoking and drinking. As a rule, the younger individuals had previously been athletically inclined and in robust health. They attained a grade commensurate with supervisory positions and sedentary habits, gained weight, and smoked and drank more. Most suffered their infarcts without a period of progressive angina and while they were physically idle.

It was apparent from study of this group of patients that the diagnosis of myocardial infarction is not entertained as early or as seriously in the young patient as in the older one. Diagnoses such as spontaneous pneumothorax, acute serofibrinous pericarditis, pleurodynia, and gastroenteritis are frequently considered first. Fortunately, the almost routine use of the electrocardiogram in the differential diagnosis of chest and epigastric pain has done much to correct erroneous first impressions.

We were unable to obtain an accurate follow-up on the 24 military personnel who returned to active duty. We do know that a number of the 50 who were retired had first been sent on "a trial of duty" for a few weeks or months. Why were they unable to perform sedentary duties? In general, we found that they were not considered acceptable for retention by medical officers. Often, if the ex-patient complained of the slightest symptoms referable to the heart and related to the physician his history of hospitalization for a myocardial infarction, he was returned to patient status with a recommendation for action by a Physical Evaluation Board. Many patients were told that they would be retired after due hospitalization and might expect a high percentage of physical disability retirement.

A simple solution of the problem would be to retire all persons with myocardial infarction; however, we are trying to retain highly motivated and skilled personnel despite borderline physical defects. Obviously, if we are to return any of these individuals to active duty, military physicians must take a more receptive attitude toward their retention, and must appreciate the difference between "fully qualified" for active duty and "acceptable for retention" on active duty.

We believe that definite criteria should be established for retainability after myocardial infarction, unless we agree that all should be retired. What should the criteria be? Let us first itemize those findings which would *preclude* return to duty of those surviving a first infarction, irrespective of age: (1) serious disturbance of cardiac rhythm, (2) significant cardiomegaly, (3) cardiac failure, (4) prolonged shock, (5) recalcitrant angina, (6) incapacitating dyspnea, and (7) serious thromboembolic complications.

There remains a group of individuals who have none of these, but who did have, unmistakably, a myocardial infarct. These people recover completely, are asymptomatic on moderate activity, and have a normal-sized heart and normal circulation. We believe these persons should be retained on active duty, because many are well qualified and motivated noncommissioned and commissioned officers. Such a policy, if put into effect, should be publicized to medical personnel, and these people should not be treated as invalids after return to duty. We are inclined to agree with Walker,[7] who concluded: "To restrict the activity of a patient who has survived myocardial infarction without residual cardiac or coronary insufficiency probably shortens his actual survival and surely shortens his useful life."

The decision regarding return to flying status is extremely important to those previously on flying duties. We believe that, after six months from the date of infarction, if cardiovascular examination is normal and the individual asymptomatic, he could be returned to flying status as a crew member not in primary control of the aircraft, or as a pilot in primary control in a dual control aircraft with another qualified pilot. This, of course, is our opinion derived from a strictly medical point of view, and has no inference as far as Air Force policy or suggested policy is concerned.

Since the report by Benson in 1937 of a pilot sustaining a coronary thrombosis while flying, there have been several similar instances recorded in military and civilian pilots. Although thrombosis occurs most often during the sleeping and resting state, it is reasonable that chance alone would dictate its occasional occurrence while flying. When one ponders the number of people with advanced coronary disease who fly in commercial and private aircraft, and considers the fact that a small amount of hypoxia may occur in flight even in pressurized aircraft, it is amazing that coronary thrombosis in flight is not rather commonplace.

SUMMARY

One hundred and seven patients were treated for myocardial infarction at this base in the five-year period ending 31 December 1955. Eighty-seven of these were active duty military personnel, 8 were retired personnel, and 12 were civilians.

Thirty-eight infarctions occurred in patients below the age of 40. Most of the 107 infarctions occurred during the summer months, while the patients were sleeping or resting. They usually occurred without a history of angina in individuals who were normotensive but inclined to be obese, who smoked heavily, drank moderately, had a sedentary job, and had a family history of cardiovascular disease.

Thirteen of the 87 active duty military personnel died as a result of infarction, 24 returned to duty, and 50 were retired with an average disability rating of 80 per cent.

We believe that those individuals suffering relatively mild myocardial infarction without objective or subjective sequelae should be returned to duty. This will require intelligent management by base medical personnel to eliminate unnecessary referral of persons with only slight or equivocal symptoms for hospitalization and evaluation.

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PAGING PATHOLOGISTS

The acute shortage of pathologists is an ever-recurring topic at national medical meetings. It is estimated that the total number of pathologists in the United States should be doubled to meet the needs of practice, teaching, and research. More and more hospitals have been adding pathologists to their staffs since World War II. The recognition of the important role of the pathologist in clinical medicine and residency training has placed the pathologist in a strategic position of great demand. Many new research programs involve tedious studies in pathology. The military services which have maintained essential large forces in this country and abroad require pathologists.

—HAROLD L. STEWART, M. D.
in *Public Health Reports*
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PRESERVED ERYTHROCYTES IN Rh ANTIBODY TESTING

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IN erythrocyte testing, especially in Rh typing, it has long been axiomatic that fresh cells should be used. Hattersley and Fawcett[1] and Wall, Jayne, and Beauchamp[2] have recommended the use of cell suspensions preserved in a manner similar to that used for sheep cells in the complement fixation[3] and heterophil procedures. Even though this would be helpful in solving problems of cell procurement and test variability, recently published methods of Rh antibody testing still specify the use of fresh cells as a source of antigen.[4,5]

In view of the foregoing, and since preserved cell preparations have become available commercially, wider acceptance of this method appears indicated. Therefore, the following data are presented as further confirmation of the feasibility of using such preserved cells for Rh antibody titrations.

METHODS

The modified Alsever's solution contained 2.05 per cent dextrose, 0.8 per cent sodium citrate, 0.42 per cent sodium chloride, and 0.055 per cent citric acid in doubly distilled water. This was dispensed in bottles with rubber caps and sterilized by autoclaving. Blood to be preserved was injected aseptically into an equal quantity of the preservative solution. The bottle of preserved cells was then stored at approximately 6°C until required for use.

When cells for testing were desired, a portion was removed aseptically with a sterile syringe and 20-gage needle, after the surface of the rubber cap was swabbed with 70 per cent alcohol. These cells were then washed three times in physiologic saline solution and resuspended to a 2 per cent suspension in saline or albumin, as required for testing.

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To ascertain that the technic used would not appreciably increase the variability of test results, a number of cell suspensions were preserved and tested against two antiserum pools of known titer having anti-D specificity of the incomplete variety, and against a number of individual serum specimens from clinical sources. Fresh cell controls, as often as possible from the same individual, were tested in parallel against the same serum dilutions. The cells of all donors used in the experiment were group O, DcCE(Rh_1Rh_2). Antiserum dilutions were made in either physiologic saline solution or 20 per cent bovine albumin, as indicated.

All cell specimens were tested for reactivity by using them in antibody titrations against the known serum pools and clinical specimens described above. Testing was performed in 12- by 75-mm tubes. A 0.2-ml quantity of the appropriate serum dilution and 0.1 ml of the 2 per cent suspension of washed red cells being tested were pipetted to the bottom of the tube, in the order mentioned. The mixture was centrifuged at 1,000 r. p. m. (approximately 200 G on our centrifuge) for 2 minutes and placed in a 37°C water bath for 45 minutes. Tubes were then removed and recentrifuged at 200 G for 2 minutes. Readings were made macroscopically with gentle agitation of the mixture. Agglutination of cells just visible by the naked eye was called a 1-plus reading and was taken as the end point. Intensity readings for the other tubes were graded from 2 plus to 4 plus.

RESULTS

Twenty-five separate red cell suspensions from three different donors (designated Yo, Lo, and Mo, respectively) were tested against known anti-D serum pools and individual Rh antiserums. Of these, only two suspensions exhibited sufficient variability to warrant objection. In all, 140 tests were performed on the 25 specimens, at varying periods up to 6 weeks. The large majority of tests yielded the same results with preserved cells as with the fresh cells, which in 116 instances were run in parallel. Tables 1 and 2 present the data secured with the first 10 cell suspensions tested against anti-D serum pool No. 1. These are representative of the entire group, except for a particularly high variability in cell suspensions Lo 1 and Lo 2 (table 2), which exhibited 10 of the total of 14 downward variations in titer observed in 140 tests with the 25 preserved cell suspensions. These variations did not show correlation with the length of time preserved. Table 3 contains a summary of all cell reactions with anti-D serum pools No. 1 and No. 2, showing the variation in titer with different cell suspensions.

Additional trials with preserved cell Yo indicate that application to the testing of clinical specimens is feasible and that no qualitative or quantitative differences are evident as a con-

TABLE 1. *Titers of anti-D serum pool with fresh and preserved cells Yo**

Blood specimen	No.	Preservation period																			
		1st week				2d week		3d week		4th week				5th week				6th week			
Fresh	Yo 1	16	16	16	16	8	16	16	32	16	16			16	16			(16)			
Preserved		16	16	32	16	8	16	16	16	16	16			16	16			16			
Fresh	Yo 2	16	16		8	16	16	16	ND	16	16	(16)		(16)	(16)			(16)			
Preserved		16	16		16	16	16	16	32	16	16	16		16	16			16			
Fresh	Yo 3	8	16		16	16	ND	16	16	16				(16)	(16)			(16)			
Preserved		8	16		16	16	16	16	16	16				16	16			16			
Fresh	Yo 4	16	ND		16	16	(16)		(16)		(16)	(16)		(16)	(16)			(16)	(16)		
Preserved		16	32		16	16	16		16		16	32		16	16			16	16		
Fresh	Yo 5	16	16			(16)	(16)	(16)	(16)	(16)	(16)			16					16		
Preserved		16	16			16	16	16	16	16	16			16					16		

*Titers in parentheses were secured with fresh Lo cells in parallel testing.

TABLE 2. *Titers of anti-D serum pool with fresh and preserved cells Lo**

Blood specimen	No.	Preservation period																					
		1st week			2d week			3d week			4th week			5th week			6th week						
Fresh	Lo 1	16	16	16			16	16		16	16			(16)		(16)		(16)					
Preserved		16	8	16			16	8		8	8			16		8		8					
Fresh	Lo 2	16	16	16	16		16	16		16			(16)	(16)		(16)		(16)					
Preserved		16	16	16	16		8	8		8			16	16		16		8					
Fresh	Lo 3	16	16	16	16		16		(16)				(16)	(16)		(16)							
Preserved		16	8	8	16		16		16				16	16		16							
Fresh	Lo 4	16	16	16	(16)			(16)			(16)		(16)										
Preserved		16	16	16	16			16			16		16										
Fresh	Lo 5	16		(16)			(16)			(16)				(16)									
Preserved		16		16			16			16				16									

*Titers in parentheses were secured with fresh Yo cells in parallel testing.

sequence of preservation. Table 4 presents results of 27 different tests with these preserved cells against 9 different antiserums produced in the course of maternal isoimmunization. It can be seen from the repeat testing with different cell suspensions that preservation and incidental aging had no appreciable effect on cell reactivity during the period of observation. Also it is evident that the method is suitable for titrating agglutinins as well as for incomplete antibodies.

TABLE 3. *Summary of titer variations against two anti-D serum pools with preserved cell suspensions as compared with fresh cells*

Cell	Fresh cells			Preserved cells		
	No change	Up	Down	No change	Up	Down
Cell Yo	55	1	3	70	5	2
Cell Lo	52	0	0	37	0	12
Cell Mo	5	0	0	14	0	0
Total	112	1	3	121	5	14

DISCUSSION

The academic question remains as to whether slight effects of preservation can actually be detected. Therefore, the data were subjected to statistical analysis to determine the significance of observed differences between titers secured with fresh and preserved cells. Because they have a direct bearing on the results, differences in reactivity of different cells were also examined. For simplicity, results of tests with the first 10 cell suspensions (tables 1 and 2) were divided into two types of reactions: (a) no change in titer from the mode and (b) change in titer. This was considered valid because the large majority of tests yielded like titers for a given serum and because variations were no greater than one dilution from the mode. Table 5 shows these data for both fresh and preserved cells from donors Yo and Lo, tested against antiserum pool No. 1, and from donor Mo, tested against pool No. 2. The standard error of the difference between tests with fresh Yo cells and preserved Yo cells was 0.056, while the observed fractional difference was 0.040, leading us to conclude that the observed variation was due to chance. Similar comparison between fresh and preserved Lo cells yielded a significant difference, primarily due to decreases in titer. Most of these occurred in but 2 of the 25 cell suspensions. Therefore, it would appear probable that it was due to some factor not intrinsic to the preservation technic. There was no detectable difference between fresh and preserved Mo cell suspensions.

TABLE 4. *Results with clinical specimens when parallel titrations were performed using fresh and preserved cells*

Serum number	Titers using				Days preserved
	Fresh cells		Preserved cells		
	Albumin	Saline	Albumin	Saline	
8	16		16		1
	16		16		9
15	16		16		1
	16		16		8
	16		16		12
22	64		64		2
	64		64		10
	64		64		14
76	16		16		5
	16		16		12
	16		16		19
	16		16		24
77	32		16		5
	32		32		12
	32		32		19
	32		32		24
89	64	64	64	64	1
	64	64	32	64	8
	64	64		64	15
	64	64	32	64	22
	64	64		64	27
100	32		32		1
114	8		8		3
123	4		4		3

Comparison of results employing preserved cells Yo and Lo appears to indicate that cell Yo reacts more strongly. Such differences in reactivity are to be expected, but in this case the results with fresh cells and the fact that most variations occurred in only two cell suspensions cast doubt upon this explanation. The only definitely established difference in cell reactivity was with the two cell suspensions, Lo 1 and Lo 2, which appears likely to be due to factors outside the preservation process. There was no significant difference between reactivity of Yo and Mo cells.

TABLE 5. *Significance of changes in titer between different fresh and preserved cell suspensions*

Cell	No change	Change	Fraction changing	Fractional difference	Standard error of difference	t_i
Cell Yo						
Fresh	49	4	.075			
Preserved	54	7	.115	.040	.056	.71
Cell Lo						
Fresh	48	0	0			
Preserved	31	12*	.363	.363	.022	16.5**
Cell Mo						
Fresh	5	0	0			
Preserved	14	0	0	0	0	0

*Reflects results with 5 different cell suspensions in which 10 variations occurred in only 2 of the suspensions.

**A variation of this magnitude would occur by chance alone less than once in 1,000 times. (P=.001)

SUMMARY

Of 25 separate red cell suspensions drawn from 3 separate donors and preserved in modified Alsever's solution, 23 yielded results indicating that preservation did not alter the reactivity with anti-D serum under conditions of the test. A total of 140 tests were performed, using these cell suspensions preserved for varying periods up to 6 weeks. There were 18 instances of variation with the use of preserved cells as compared with 4 variant tests in a parallel series of 116 tests with fresh cells. This is a significant difference, but since it occurred in only 2 of the 25 preserved cell suspensions and was poorly correlated with the process of aging, it did not appear to be due to preservation.

Preserved cells from one donor were tested against serums from clinical sources and did not vary significantly in reactivity from fresh cells. Preserved cells were shown to be suitable for testing both incomplete antibodies and agglutinins in serum from cases of maternal isoimmunization.

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DIFFERENTIATING BACTERIAL FROM VIRAL PHARYNGITIS AND TONSILLITIS

A Rapid (Presumptive) Method

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THE PROBLEM of distinguishing pharyngitis and tonsillitis caused by bacteria (most commonly beta-hemolytic streptococcus) from that caused by a virus is not always easy on purely clinical grounds.[1] Delay in starting penicillin therapy of streptococcal pharyngitis may permit sensitization of the patient to the organism or to its products, with subsequent development of rheumatic fever or acute diffuse glomerulonephritis.

In the northeastern United States, approximately 75 per cent of the pharyngitis and tonsillitis encountered is caused by viruses with the remainder probably caused by beta-hemolytic streptococcus.[1] Here in the Southwest, the prevalence of streptococcal infection may be lower; certainly it is not higher. Thus, it is not rational to treat all patients with sore throats, even those with exudate and cervical adenopathy, with penicillin, because of the risk of penicillin-sensitivity reactions (1.2 per cent of patients treated with aqueous crystalline penicillin and 1.4 per cent or higher treated with repository types[2]). There is the further problem of creating penicillin fastness in normal pharyngeal saprophytes, which may, under rare conditions, become pathogenic.

This study indicates that simple microscopic examination of tonsillar or pharyngeal exudate by direct smear may afford an accurate, rapid diagnostic aid in differentiating bacterial (most commonly group A hemolytic streptococcal) from viral pharyngitis or tonsillitis.[1] The technic is neither new nor original, but the test is more frequently omitted than used.

MATERIALS AND METHOD

A study, undertaken during the fall, winter, and early spring of 1955-1956, was made of 40 patients with clinical acute pharyngitis or tonsillitis, with or without cervical adenitis. Their ages

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ranged from 12 to 68 years, with equal distribution of the sexes. As nearly as could be determined clinically, all were seen from 24 to 36 hours after onset.

After careful inspection of the throat, the exudate or reddened area was swabbed with a cotton applicator and the applicator rolled out gently on a glass slide. The slide was fixed in a Bunsen flame and Wright's stain applied as for a blood smear. This stain was used rather than Löffler's methylene blue because it would provide the added detail of differentiating eosinophilic from neutrophilic leukocytes and perhaps demonstrate an underlying or accompanying allergic pharyngitis. This technic usually demonstrates the predominant cell of the exudate. All patients with predominantly neutrophilic or eosinophilic leukocytes in the exudate were given three 595-mg (600,000-unit) doses of aqueous procaine penicillin G suspension intramuscularly—the first immediately, the second in 24 hours, and the third 96 hours after the first dose. The response to this therapy was measured by the speed with which fever, pharyngeal inflammation, and cervical adenopathy subsided and by the general condition of the patient after 24 hours of therapy.

Seven patients among those who had mononuclear cells predominating in their exudate were also given penicillin after throat cultures were obtained. These were selected at random, the purpose being to use the lack of response to penicillin as evidence of the viral origin of their infection, or, at least, of the absence of beta-hemolytic streptococci as a causative agent.

RESULTS

In 26 cases with polymorphonuclear neutrophils predominant in the exudate, 22 had positive cultures for beta-hemolytic streptococci. In the remaining 4, this cellular response heralded a hemolytic staphylococcus infection.

All 22 patients with positive hemolytic streptococcus cultures and polymorphonuclear neutrophils in the smear made a good response to penicillin therapy, with rapid subsidence of all symptoms in from 12 to 36 hours. The 4 patients with hemolytic staphylococcus infections made a moderately good response, with subsidence of symptoms in 48 hours.

In contrast, 13 patients with mononuclear cells in their exudate showed no hemolytic streptococci or staphylococci in their cultures. One of these patients had acute infectious mononucleosis with a pharyngeal membrane and predominantly monocytic cells on smear examination. Seven of the 13 were treated with penicillin but made no response and had a course identical with those treated purely symptomatically, with fever and sore throat lasting 3 days or longer.

One patient with predominantly mononuclear cells in the pharyngeal exudate had a positive culture for beta-hemolytic streptococcus but received no penicillin. He fortunately developed no sequelae to his infection.

It should be emphasized at this point that the apparent predominance of streptococcal and staphylococcal sore throat in this series does not reflect the incidence in the community, but only in 40 patients with a variety of chronic pulmonary and cardiac conditions, who presented themselves at the office for treatment of acute sore throat.

Other causes of polymorphonuclear neutrophilic pharyngeal exudates not encountered in this study include fusospirochetal infection, late complications of the common cold, late stages of viral pharyngitis, and, of course, diphtheria, which should always be kept in mind in the differential diagnosis of sore throat. Fusospirochetal pharyngitis usually responds well to penicillin, as may the late bacterial complications of the common cold and viral nasopharyngitis. The latter two diseases were believed ruled out by history, since all patients were seen within 24 to 36 hours after onset.

A source of error in this method of study is the fact that many viral infections, such as the common cold or viral nasopharyngitis, may be characterized in their late stages by a leukocytic response in the nasopharyngeal or pharyngeal exudate. At this stage they may also respond well to penicillin, as a result, probably, of invasion by penicillin-susceptible bacteria or coincidentally. An attempt to counter this error was made by selecting patients believed to have had sore throats of only 24 to 36 hours' duration.

Another pitfall is the use of culture alone rather than in conjunction with serologic typing of the recovered streptococci. All pathogenic streptococci in the nasopharynx and pharynx are in group A, and can be so classified only serologically.

About 1 or 2 per cent of normal adults harbor these organisms in their throats; these patients conceivably might have a viral pharyngitis, yet yield pathogenic streptococci on culture and typing.[3] It is recognized, therefore, that the recovery of beta-hemolytic streptococcus from the throats of patients with acute pharyngitis of short duration can be considered as only presumptive evidence of its causative relationship to the pharyngitis. Further, delay in response to penicillin may occur in streptococcal infections, but the criterion of speed of response was used not alone, but in combination with other criteria listed, and it is believed that it has some significance when considered in that light.

SUMMARY AND CONCLUSIONS

A rapid, simple method for the presumptive diagnosis of hemolytic streptococcal sore throat is suggested that is quicker than either differential white blood cell count or throat culture. It uses Wright's stain for study of a smear of pharyngeal exudate. If there is a predominance of neutrophils, the infection may be considered to be bacterial, probably streptococcal, and should be immediately treated with penicillin. If the exudate is predominantly mononuclear or epithelial, the infection may be regarded as viral and antibiotic therapy withheld, at least until a culture is obtained.

This method was used in 40 patients with acute pharyngitis or tonsillitis, who were seen from 24 to 36 hours after onset of illness. Pharyngeal smears from 26 indicated the presence of bacterial infection, which was confirmed by culture. The 22 patients with beta-hemolytic streptococcus showed a dramatic response to penicillin in 12 to 36 hours, and 4 with hemolytic staphylococcus had a fair response to penicillin in 48 hours. Pharyngeal smears of 13 patients indicated the absence of bacterial infection. Cultures in this group did not grow beta-hemolytic streptococcus, and 7 of the 13 were treated with penicillin without effect.

This series is a small one, but it is believed that the method deserves further study, using serologic typing of the organism recovered on culture and making certain, if possible, that one is not dealing with the bacterial complications of the common cold or viral nasopharyngitis, or with coincidental nasopharyngitis in a carrier of group A streptococci.

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DEVELOPMENTS IN SOCIAL PSYCHIATRY

Observations in Five Selected English Hospitals

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FOR MORE than a month, we were fortunate in being able to spend full time with the staffs and patients of five unique English hospitals for the treatment of emotional disorders—hospitals selected as representative of the more recent trends in social psychiatry, with emphasis on institutional management and treatment.* We were interested in knowing about (1) the types of illness treated within the hospital setting, (2) the actual process and extent of behavioral change, and (3) the specific procedures that had evolved. We wanted to see what had been achieved by applying these technics over a considerable period of time, in order to better evaluate the psychiatric admissions program that was begun at this hospital by Dr. Harry A. Wilmer, following a visit to England a year ago. In less than one year, the results of using these methods in a military setting had been more immediate and far-reaching than anticipated, considering that in the English hospitals these social psychiatric methods had been in use for 8 to 10 years and more.[1-4]

This report will describe our impressions of the five hospitals and discuss some of the areas and technics that we believe will be of value in other hospital settings, particularly within the armed services.

BELMONT HOSPITAL**

Fourteen days were spent in the Social Rehabilitation Unit of Belmont Hospital, in Sutton, south of London. The unit is housed in a building over one hundred years old, formerly used as a workhouse. It was badly blitzed during World War II and still shows

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*We wish to thank Sir Walter McClay and Doctors Maxwell Jones, T. P. Rees, Thomas Main, and Joshua Bierer and their staffs for time spent in showing us their treatment methods.

**We are indebted to Dr. Louis Minsky and Miss Phyllis Arnold for arranging for us to "live in" during our stay, in order to participate in the entire day (and night) of the patient's resocialization.

evidence of the bombings. The hospital is an open ward hospital of 400 patients, emphasizing physical treatment of the neuroses. The unit of about 100 male and female patients is run autonomously, but under the management of the hospital proper. Patients are referred to the unit from all parts of England by courts, physicians, and psychiatrists. They represent the various character and behavior disorders and some neuroses. Many are those traditionally referred to as "psychopaths," with social backgrounds replete with thievery, various types of addictions, sexual delinquency, and continual inability to make social and vocational adjustments. They are admitted for an undetermined time; however, the average stay is from four to six months, and no patients remain longer than a year.

The staff consists of the Medical Director, Dr. Maxwell Jones, three other psychiatrists, a head nurse (sister), two male staff nurses, a night nurse, a psychiatric social worker, a psychologist, four workshop instructors, two secretaries, and two domestics. In addition, there are two Ministry of Labour Disablement Resettlement Officers (DRO's) who assist in obtaining employment for patients upon their discharge from the hospital.

The unit ". . . is designed to help patients overcome their social fears and problems and to readjust to life outside."[5] The idea of the therapeutic community originated nine years ago with Maxwell Jones from his experiences with rehabilitation of prisoners of war who needed to become resocialized before returning to their communities. "Similarly, patients in the unit needed comparable assistance in learning new values and ways of readjusting to society."[5]

The fundamental aim in treatment is socialization of the patient, and the unit is designed to create a therapeutic atmosphere:

> . . . where patients can . . . (see) themselves as they really are. By so doing, they can begin to learn to understand and, if possible, modify their behaviour through analysing their everyday relationships. Another aim of treatment is to give practical help in finding work and adjustment to the family outside.[5,6]

The actual workings of the unit can perhaps best be described by the following account given by the sister:

> At least one third of the day is spent in one group or another. It is here that the unit life differs from ordinary life, for much of the treatment is based on trying to understand, by talking freely, the source of difficulty in relationships between people. The lessons learned in these psychotherapeutic groups are related to social life outside.

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1. The whole community of patients and staff, totaling about 120 people, meets every morning from 8:30 to 9:45 a. m. People sit where they like in a circle two or three deep. There is no formal chairman, the doctor normally acts as timekeeper. Any topic can be discussed and raised by any patient or staff member. Thus the range of topics may include a discussion on drunken behaviour stimulated by an alcoholic's drinking bout the night before; talking after lights out; homosexuality; pairing off; complaints about the hot water system or missing light bulbs; or criticism or praise of other patients and members of staff, et cetera.

2. From 9:45 to 10:15 a. m. the patients have coffee in their cafeteria, and the staff meet in the medical director's office for tea and a discussion on the meeting. An attempt is made to analyse and understand some of the various factors contributing to the tensions as seen in the previous meeting. In addition, the staff meets twice a week for an hour to discuss and analyse staff tensions, et cetera.

3. At 10:15 a. m., each doctor takes his patients in a therapeutic group. Three doctors have two groups of 45 minutes each. The other doctor prefers to treat all 25 patients in one group for one and one half hours.

4. After lunch each ward takes it in turn to have a weekly ward meeting from 12:30 to 1 p. m. A doctor, a sister, social therapists, and patients of the ward are present. Again any topic may be discussed.

5. The social therapists have a tutorial seven days a week with each member of the permanent staff in turn.

6. The instructors meet weekly to discuss workshop problems.

7. The domestic staff meets with the sister weekly to discuss domestic problems.

8. Every Wednesday a family group is held during visiting hours.[7]

One of the unique forms of treatment is the work group to which each patient is assigned upon entering the unit. These work groups were created to give the patient opportunity to contribute to the maintenance of the unit in a meaningful way, as well as to be therapeutic.

The activities include painting the interior of the hospital (the patients decide on the color of the paint to be used, when a particular room will be painted, and the manner in which it is to be painted), caring for the grounds of the unit, and providing fresh

flowers for the hospital. The workshop group repairs and constructs furniture for the unit; the tailoring shop group makes and mends the patients' clothing; and the home group is responsible for cleaning the wards and other parts of the unit. Patients are required to spend a certain number of hours in the work groups and are assigned to keep a formal record of tardiness and absenteeism, which in turn is fed back to the entire community by name and by work group, thus providing for a spirit of competitiveness between the various work groups. The workshop instructors hold a weekly group meeting with the patients assigned to their particular group, and problems concerning work and interpersonal relations involved in the working situations are discussed and resolved.

There is an intensive program of social activities in the unit, centering around a club room where nightly dances and other forms of social activities are run by the patients. Television is not permitted, because it would decrease socialization.

Efforts are made to extend the therapeutic process beyond the hospitalization of the patient, and along these lines a family group is held weekly, composed of relatives who are interested in coming to the hospital to learn more about themselves and the patient, various staff members, and any interested patients. This weekly group frequently includes as many as 50 members, and its success is measured in part by the frequent and regular visits of some of the relatives. An ex-patients' group meets one night per week at St. George's Hospital in London, where any former patient may come to talk about problems, renew old acquaintances, or gain courage to continue on in his daily life.

Much of the success of the treatment lies in the "social therapists," who are 11 young girls primarily from the Scandinavian countries and Holland. They have various backgrounds, but usually are interested in one of the social sciences, like to be with people, and come to the unit for six to eight months to observe its functioning and to see the country. Their training, though informal, is intense, consisting of afternoon tutorials seven days a week with the permanent staff. Here they are given a basic understanding of normal growth and development and opportunity to learn about interpersonal relations from their daily experiences with the patients. Current anxieties are thus used in a therapeutic manner through the daily tutorial, which carries through the basic concepts of the therapeutic community by extending its methods to the staff as well as to the patients. That the girls are foreigners seems to be advantageous, as the patient who cannot adjust to society also feels he is a stranger and can accept her more readily than an English girl who might have prejudices, even at an unconscious level, which would hinder the treatment process. Their primary role is to be a per-

son with whom the patient can learn technics of social relationships, and in the treatment program they encourage communication and feedback between patients and between patients and staff.[8]

WARLINGHAM PARK HOSPITAL

This is a 1,200-bed mental hospital in Warlingham, Surrey, which is run entirely with open wards and treats all types of mental disorders, including chronic schizophrenic patients. The hospital is located in the countryside of southern England, slightly isolated from even the nearest small community. All traditional types of psychiatric treatment are used here, including deep insulin coma, electroshock, psychosurgery (leukotomy), and the new tranquillizing drugs. The patients are admitted to two admission treatment units for male and female patients, about 50 of each. They remain here until their illness has become stabilized and they are able to go on to other wards. Many leave the hospital directly from these units, but some remain as long as three or four months on active physical treatment, before moving on to another unit.

We were especially interested in the management of the more severely disturbed patients on open wards, and visited two such "refractory" wards (one for males and one for females). The staff of the disturbed ward for approximately 40 male patients consisted of two male nurses and one female student occupational therapist (visitor from the Menninger Clinic).

One of the most impressive procedures at Warlingham Park is the use of patients in the treatment program. Alcoholic patients are successfully used as instructors for older psychotic patients, teaching them crafts such as weaving, crocheting, et cetera.[9]

One is continually impressed with the degree of therapeutic sophistication of the entire staff of the hospital. All personnel are thoroughly familiar with the aims of treatment and seem to be highly skilled in carrying them out in all situations. The role of the nursing staff has been considerably modified from that in most mental hospitals, as the superintendent reiterated how he concentrated on meaningful occupations for the staff as well as the patients.

CHAMPION HOUSE

This hospital is a lovely old English estate in the countryside, some 10 miles from Warlingham Park. It has about 30 male and female patients who, from a social and psychiatric standpoint, are not considered ever able to be discharged from a mental institution. These patients have been hospitalized for a long time and have no family or friends to return to, but are able to care for themselves within this type of setting and to perform

normal tasks contributing to running the home. The staff of this unique hospital consists of a nurse and two or three domestic employees, and the major part of running the house and grounds is done by the patients.

Most of the patients have been hospitalized a good deal of their lives, one of the modern-day tragedies of mental institutions. The driver who took us to the hospital remarked, "had we known 20 years ago the things about treatment we know today, these patients wouldn't be here." One patient had been hospitalized over 50 years.

CASSEL HOSPITAL

Cassel Hospital is primarily for treatment of neuroses by intensive psychotherapy. It is an entirely open hospital, and physical treatment is not used. The orientation is psychoanalytic, and most of the permanent staff have had a high degree of training in psychoanalytic theory and technic. The head nurse is a qualified lay analyst, several other nurses have been analyzed, and one is an analytic candidate. The nurses do not wear uniforms or make ward rounds, but each has a specific function that is used therapeutically in working with the patients. Nurses are encouraged to work at tasks they enjoy doing, thus being models for the patients. One nurse, for example, enjoys sewing and keeps her machine in an easily accessible stair landing at the hospital. Patients may join her or drop by to visit. Through meaningful work which the nurse enjoys, the opportunity for social relations is extended in a manner which facilitates more rapid and complete recovery than could be achieved by a nurse in a white uniform seeing to keeping the ward in spotless order. Although the treatment is centered about individual intensive psychotherapy, the patients run the hospital to a large degree. Most practical matters in its administration are handled quite formally by committees, and decisions reached by the patients are carried through. The matter of patients' letters being stolen from the mailboxes was brought up by a committee of patients and staff. The larger community had decided that this was the staff's responsibility and that they should take steps to end the pilfering. When Dr. Main, the Medical Director, pointed out that the staff's responsibility ended legally when they accepted the mail from the post, the committee considered other means. Various methods were considered, including reporting the matter to the police and bringing in plain-clothesmen. The staff deflected the responsibilities to the patient committee, who worked out a solution to ensure safekeeping of their mail, and this was taken back to the community for final approval.

One of the unique features of this hospital was the admission of the patient's husband or wife and children if necessary, based on the premise that emotional illness is nothing to keep from

the family and that they may, in fact, aid in the treatment process. Some of the mothers have to bring their children as they have no means to provide for them while hospitalized. The entire atmosphere of the hospital was natural rather than institutional.

Education and training of the staff is stressed continually and at all levels. The program includes informal training through working under close supervision with a highly trained staff, and formalized presentations of carefully developed theories of personality development, but it always emphasizes the normal personality rather than abnormal states. In the summer a course is given for nurses outside the hospital, dealing with growth and development and helping the nurse to see her role in relation to the patient's treatment.[10]

MARLBOROUGH DAY HOSPITAL

This institution bears little resemblance to a hospital in the usual sense of the word. It is located in London and treats about 100 patients who come to spend the day in intensive treatment and return to their families or homes at night. The underlying philosophy is that total hospitalization might be inadvisable or even harmful by interfering with readjustment to society. An intensive treatment program includes individual psychotherapy, group psychotherapy, and recreational and occupational activities as well as social ones. There is an evening clinic for those patients who cannot receive treatment during the day because of their work schedules or who are reluctant to ask their employer for time off, for fear he may not understand emotional illness and they might lose their jobs. Meeting crises with direct action, thereby giving the patient hope and getting him into treatment sooner, is used frequently in the practical approach by Dr. Joshua Bierer and his staff at this hospital.

The hospital maintains a large number of "social therapy clubs" in the London area and throughout the world for ex-patients and others to meet together socially and be provided an opportunity for treatment.[12,13]

DISCUSSION

In relation to the technics developed by these five very different hospitals for treating emotional disorders, certain principles seem paramount and pertain most directly to the use of social psychiatry in hospital treatment.

Elevation of the Role of the Patient. Respect for the dignity of the patient seems to be the most fundamental idea in the treatment programs of the hospitals we visited. Formerly, the patient was regarded as "irresponsible," "dangerous," "psychotic," "neurotic," et cetera. These terms designate their behavior as unacceptable and serve to isolate them from human contact. Traditional

mental hospitals further isolate patients because of the staff's inability to tolerate their behavior; thus the over-use of physical therapy, "quiet" rooms, sedation, restraints, and other forms of treatment often lightly disguised as being "for the good of the patient."[3] The patient's behavior is increasingly seen as purposeful and meaningful to him, and the principal task of the staff is first to be able to accept the behavior, no matter to what lengths the patient may go to encourage reprisal, and then to understand what the patient is trying to communicate to others. The symptom of his illness, while serving to isolate him from human society, which he sees as distrustful and fearful, can thus be used as the first step in his rehabilitation. When this process is understood, it is transmitted to other staff members and to the patients, who actually carry out treatment according to their own abilities. It allows for the development of individuality in both patients and staff.

One of the initial impetuses for re-examination of the traditional roles of the staffs of mental hospitals was associated with the acute shortage of trained personnel following World War II. The whole idea of the patient-centered hospital involves the working-through of staff anxieties regarding their own acceptance of the patient's socially unacceptable behavior.[14] Only as staff members are able to tolerate the patient's behavior can they feel comfortable enough to allow and encourage the "well part" of the patient to emerge. As staff members are better able to examine their own anxieties, feelings, prejudices, et cetera, toward unacceptable behavior, patients become increasingly more responsible for running their own lives. This involves the often tremendously painful task of examining one's own behavior as well as the effectiveness of traditional hospital procedures.

The socialization process begins when the patient is allowed increased participation in the total treatment program by sharing in administrative decision making, as well as helping other patients—and staff! The change-over from a more authoritarian atmosphere to one where staff members feel comfortable enough to give up some of the more suppressive elements of their roles is not an easy or smooth adjustment.[14] The hierarchic arrangement which the hospital fosters because of the wide divergence of training and experience of the various staff members must be critically examined when considering the establishment of an environment conducive to co-operation and mutual respect. For this reason, a continual education program is needed whereby new members can become acculturated and older members may continue to grow.[15]

Communication and Feedback. There appear to be two main areas where the patients contribute most to the treatment program in

the therapeutic community-type hospital. These areas we may roughly designate as administration and actual treatment.

Assuming that patients often talk to each other more readily than to the staff, it follows that patients often will more easily accept suggestions from other patients than from the staff. It would appear that communication between patients is facilitated or enhanced by staff-patient communication to the point where the patient feels increasingly comfortable with the staff. Intimate contact between patients in this type of hospital setting often encourages the initial revelation of important and frequently disturbing thoughts and ideas to other patients. In other instances the patient feels comfortable in revealing such material only to staff members. The basic premise in the therapeutic community type of treatment is that both sources of communication will at one point or another be fed back to the entire community or to large segments of it. When the idea of free communication and feedback has been properly developed and used, the patient's confidante may bring up the actual content of the material in the group or, if he is a more skillful therapist, will encourage the patient to appeal to the community for assistance and understanding of his behavior and thus attempt to arrive at acceptable solutions for his difficulty.

Insofar as staff members are able to allow patients to share in decision-making, the administration of this type of hospital also becomes therapeutic. The appeal to the group conscience becomes an enforcing agent and represents a highly developed type of social control which exercises the authority in a community. The degree of patient participation in administrative and therapeutic endeavors is perhaps most graphically illustrated by the extensive use of alcoholic patients in Warlingham Park Hospital. Here chronic alcoholics are used as therapists for older schizophrenic patients. They are assigned small groups of patients and work with them daily in various activities which they enjoy. As the alcoholic patient becomes increasingly more skillful in dealing with sicker patients, he is beginning to regain self-confidence and to develop a feeling of accomplishment in the total treatment program. In addition, he receives group and individual psychotherapy for his own disorder. In such instances we see developed a more highly refined process of the concept which Stanton and Schwartz[16] have set forth as "administrative therapy."

Training the Staff. In order to establish and perpetuate the fundamental ideals of a therapeutic community in a hospital setting there must be a means for indoctrination and continual growth of the staff members. By virtue of traditional medical training in a highly structured hierarchy, certain aspects of roles and role expectations must be "unlearned." Since much of the suc-

cess of social psychiatric methods depends on the constantly changing nursing staff, a method of education and re-education, taking into account the staff's own dynamics, needs to be established. At the Social Rehabilitation Unit the use of "tutorials" has been found appropriate to the needs of the program. These are conducted seven days a week by a member of the permanent staff. The turnover of "social therapists" is frequent and their backgrounds varied. Thus their training must include a basic knowledge of people and a minimum of specific nursing technics. The latter are taught by the nurse only as the situation arises, and the staff member then feels no pressure to be an expert on any phase of nursing. The nurse likewise can request assistance from the hospital proper if a specific nursing situation arises requiring specialized knowledge or technics. Too often in their relationships with patients, psychiatric nursing personnel feel they must be able to deal with the patients in an unrealistic "therapeutic" manner. As the patient sometimes overidentifies with the staff member in a transference situation, role expectations become confused, and the staff member feels he must of necessity interpret the patient's behavior in order to help him. This is often coupled with the staff's own need to feel they are helping the patient in an active manner as formerly demanded in their medical training.

When making a transition from a traditional psychiatric hospital structure to a more "equalitarian" organization emphasizing understanding and dealing with interpersonal relations, attitudes of the staff must be closely scrutinized. As Jones and Rapaport[17] have pointed out, much of the treatment procedure stems from the relations between individuals and groups within the institution, and the staff's behavior becomes crucial.

Our former methods of teaching nursing personnel are believed actually to perpetuate social distance between staff and patients, rather than facilitate communication and check distortions. Formal teaching of limited psychiatric material often fosters defensiveness on the part of the staff member and when his need to be "junior psychiatrist" is met, rehabilitation of the patient is hindered. The concept of "social therapy" as distinct from "psychotherapy" has important implications. The primary role of the social therapist is one of providing opportunity for the patient to relate to others and to encourage him to feed back his feelings to the community in order that they may understand him and help him. In this way the treatment process is hastened, as he now receives help from all members, consistently and for 24 hours per day. Dangers and pressures of individual psychologic interpretation are lessened, and social relations are fostered.[8]

As all staff members and patients learn to feed back information to the whole community, it is possible to arrive at therapeutic goals for each patient—the decisions become community ones, and everyone understands the goals and shares in the treatment process. The success of treatment in the relatively short time of hospitalization (*e. g.*, four to six months at the Social Rehabilitation Unit and at the Cassel) for chronic character and behavior disorders and neurotic difficulties is thus understandable, as each patient has in a sense many therapists, and he too becomes a therapist. More important, he is living in a milieu which is consistently therapeutic, and treatment, as Maxwell Jones expressed it, is like being put in a "pressure cooker" to get the patient "well done" in a hurry.

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OPERATIVE RESULTS IN LUMBAR "DISK" SYNDROME

Majority of Patients Return to Full Duty

GALE G. CLARK, *Commander, MC, USN*

THE EFFECTIVENESS of modern operative therapy of herniated lumbar nucleus pulposus was revealed by review of the cases of 100 unselected consecutive patients who were operated on in this hospital during 1952 to 1955. All of these patients were military personnel on active duty, 77 in the United States Navy, 1 in the British Navy, and 22 in the United States Marine Corps. All had the same general management postoperatively.

METHOD OF TREATMENT

Conservative management was tried in all cases for a period of from two to six weeks. This consisted of bed rest on a very firm mattress and analgesics as necessary. Tolserol (brand of mephenesin) was administered when muscle spasm could be identified by palpation or observation of the back in motion, or if roentgenographic studies indicated that the normal lordotic curve was straightened. If the patient showed improvement on this regimen, he was sent to physiotherapy for exercises to regain maximum power in his back and gluteal muscles.

Myelography was performed if there were signs of a single radicular syndrome or if incapacity for work persisted in spite of conservative therapy. It was never done for symptoms alone except in the very rare case where, in spite of absence of radicular signs, the patient insisted that he could not perform his usual duties. In two of five such cases, a myelographic defect consistent with herniation of a nucleus pulposus was observed, and these two patients were operated on.

Myelography was performed preoperatively in all but one of the 100 cases. The reasons for this were twofold: (1) Even though a single radiculitis had been identified by clinical tests and the affected dermatome labeled, there was always the possibility that

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a pre- or post-fixed spinal cord had caused the clinical labeling to be in error by one vertebral level; (2) more complete and thorough records were made available for preoperative study to identify the size and extent of the mass pushing on the nerve root.

The operative procedure was the popular technic of interlaminar exploration, in most cases without removal of bone. Occasionally, edges of the lamina above and below the lesion were rongeured away for more adequate exposure. A hemilaminectomy was performed in one case only; this patient had had extrusion and scattered fragmentation of his nucleus pulposus. All operations were performed under general anesthesia.

Postoperative management was considered to be one of the most important elements in the patients' treatment. After being operated on in the morning, most patients were allowed to get out of bed that same night and attempt to void into a urinal while standing by the edge of the bed. Every patient was out of bed once on the first postoperative day. All were urged to sit on the side of the bed frequently, to dangle their legs, and were allowed out of bed for short intervals for the first five postoperative days. Walking was allowed as the patient desired, but always for very short periods. Stitches were removed on the seventh postoperative day. After this the patient was transferred to the convalescent ward, where he was allowed to take frequent but very short walks and was instructed in exercises designed to achieve the maximum power in the lumbar and gluteal muscles.

Two weeks postoperatively the patient was given 30 days' sick leave, with strict orders to continue his exercises at home for five minutes of every waking hour. All patients reported by mail, after two weeks of their four weeks' leave, that they were pursuing this regimen at home. On return from sick leave, physiotherapy was increased for a period of 10 days, after which the patient was re-evaluated.

RESULTS

The results obtained by the management described may be summarized as follows:

*Returned to duty (75 per cent):**

*The military reader will appreciate the variety of strenuous duties that were accomplished successfully, by scanning the ranks and rates of the 57 patients who returned directly to full duty 2 months after operation, and of the 18 additional patients who eventually returned to full duty. They were as follows: Air Controlman, 5 Aviation Machinist's Mates, Aviation Storekeeper, Aviation Electronicsman, Aviation Structural Mechanic, Airman, Aviation Electronics Technician, 5 Boatswain's Mates, Boilerman, Builder, Damage Controlman, Electrician's Mate, 2 Enginemen, 2 Electronics Technicians, 2 Firemen, Pipe Fitter, Gunner's Mate, Chief Gunner, 2 Hospital Corpsmen, Inter-Communications Electrician, 3 Machinist's Mates, Personnel Man, Quartermaster, Radarman, Seaman Apprentice, Steward, Ship's Serviceman, 2 Storekeepers, 3 Seamen, Torpedoman's Mate, Yeoman (WAVE), 3 Marine Privates First Class, 9 Marine noncommissioned officers, Marine officer, and 14 Navy officers.

57 patients returned to full duty 2 months after operation;

16 returned to full duty after 3 to 6 months of limited duty;

1 was sent to the Physical Evaluation Board and then returned to full duty;

1 was sent to limited duty, then to the Physical Evaluation Board, and finally returned to full duty.

Discharged (25 per cent):

14 patients were not returned to military duty and were discharged from the military service 3 to 4 months postoperatively;

9 were sent to limited duty, but after 6 months were not improved enough to return to full duty and were discharged;

2 were sent to full duty but were unable to perform their work adequately and were discharged.

Of the 14 patients in the group listed above as "not returned to military duty," 8 were sent to the Physical Evaluation Board at their own request, because they desired evaluation at the end of enlistment, prior to discharge from military service. It is believed that some of these men could eventually have been returned to full duty if expiration of enlistment had not prevented their being sent to limited duty for a period and then re-evaluated.

Those patients who were discharged from military service because of disability were estimated by the Physical Evaluation Board, on the basis of symptoms as well as signs alone, to have an average of 30 per cent disability at time of discharge. Of the 25 persons discharged, 1 was rated at 0 per cent disability, 1 at 10 per cent, 10 at 20 per cent, 4 at 30 per cent, 3 at 40 per cent, 5 at 50 per cent, and 1 at 60 per cent.

DISCUSSION

The urgency of reporting these cases was brought to my attention when two Chief Hospital Corpsmen were selected for Warrant Officer and there was hesitancy in qualifying them physically for their commission, solely because they had a history of interlaminar explorations for herniation of a lumbar nucleus pulposus. *One had been on full duty for 7 years and another for 5 years.* It is significant that three quarters of the patients herein reported returned to duty, and that in many cases this involved vigorous activity. Two pilots returned to flying planes, and boatswain's mates and motor mechanics returned to their regular work.

The follow-up period on these patients ranged from 6 to 28 months. A longer period would be of interest in evaluating long-term results, and probably would disclose a few men who were unable to remain on full duty; however, there is a definite need, now, to dispel common and unjustified pessimism toward the results of treatment in this disease. In this group, 75 per cent of the patients operated on returned to full and active military duty.

ORAL LICHEN PLANUS AND LEUKOPLAKIA

Differential Diagnosis and Treatment

HARRY L. LEVIN, *Captain, DC, USNR*

A DEFINITIVE diagnosis of a disease with manifestations in the oral cavity frequently requires a variety of laboratory criteria. Lichen planus (figs. 1 and 2) and leukoplakia (figs. 3 through 5) are two such diseases. Because the latter is considered to be precancerous it is the responsibility of the dental and oral surgeon to be able to differentiate it from the former.

Lichen planus of the mouth is not an important disease per se, as it causes no subjective symptoms and has no serious sequelae. It is of great significance, however, from a diagnostic standpoint as it is frequently mistaken for leukoplakia, a disease of great importance.[1] It should be emphasized that patches of leukoplakia that have reached the verrucose, papillomatous, and ulcerated stage or contain hard nodules may be cancerous (squamous cell carcinoma grade one half), and therefore require an adequate biopsy.

In typical cases, lichen planus and leukoplakia each present a definite histologic picture;[2] however, in clinically atypical cases a corresponding nonspecific histologic picture is frequently observed, and a clear-cut diagnosis is not always possible. Additional biopsy specimens, taken at intervals, usually aid in establishing a correct histologic diagnosis.

Lichen planus is characterized by filigree-like or annular markings on the buccal mucosa, with definitely outlined, round or polygonal, pearly-white nodules; whitish streaks on the tongue; and accompanying lesions on the skin.[3] Magnification may show a network of bluish-white lines, known as Wickham's striae. Early lesions usually are erythematous with a violaceous tinge, while older ones tend to be darker.[4]

Brocq[5] gave an accurate diagnostic histologic picture of lichen planus and cited a case in which the lesions of this disease and those characteristic of leukoplakia appeared in the mouth at the same time. Darling and Crabb[6] emphasized the oral manifestations of these two diseases; however, the mouth lesions associated

From U. S. Naval Receiving Station, Boston, Mass.

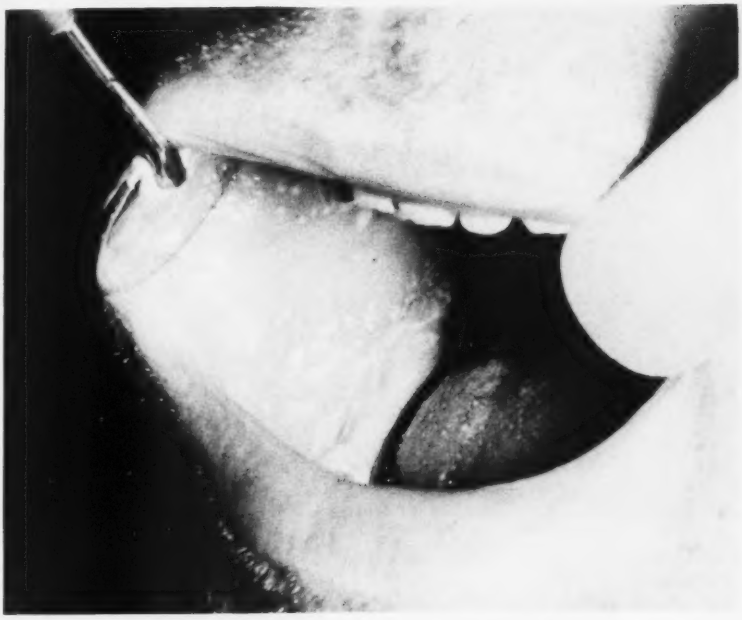

Figure 1. Lichen planus of the buccal mucosa, right side, in a male patient of nervous temperament.

with lichen planus are only part of a generalized disease process and are, in effect, skin lesions modified by environment. Nevertheless, the basic pathology and clinical appearance of the skin lesions are relevant to an understanding of the disease in the mouth. Lieberthal[7] described the papules observed in lichen planus, and which may become verrucose. Fox[8] emphasized the importance of differentiating moniliasis from lichen planus as their clinical appearance may simulate one another. With the introduction of the antibiotics, moniliasis of the mouth has become more common than lichen planus. Furthermore, Fox's claims are not in accord with other investigators. Cawley and Kerr[9] and Ormsby and Montgomery[10] described the initial lesions of lichen planus as being bright red in color and later assuming a reddish purple or violaceous hue. With clearing of the eruptions, hyperpigmented macules commonly persist at the site for weeks or months. Cooke[11] described an atrophic form of lichen planus of the mouth, frequently associated with erythematous areas and shallow ulcerations.

The differentiation of lichen planus and leukoplakia of the oral cavity is summarized in table 1.

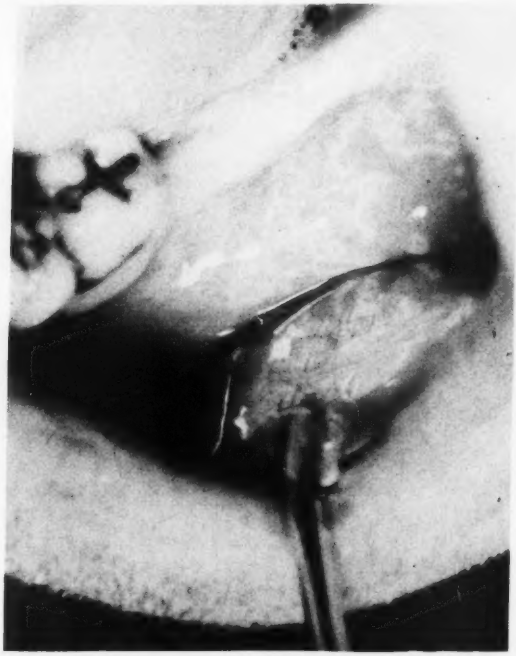

Figure 2. Lichen planus of the buccal mucosa, left side, of a male patient who is a moderate smoker.

Figure 3. Leukoplakia of the buccal mucosa of a male patient who is a heavy smoker. Note verrucose characteristics of the lesion. (Courtesy of Dr. A. Budner Lewis and the Rhode Island Hospital)

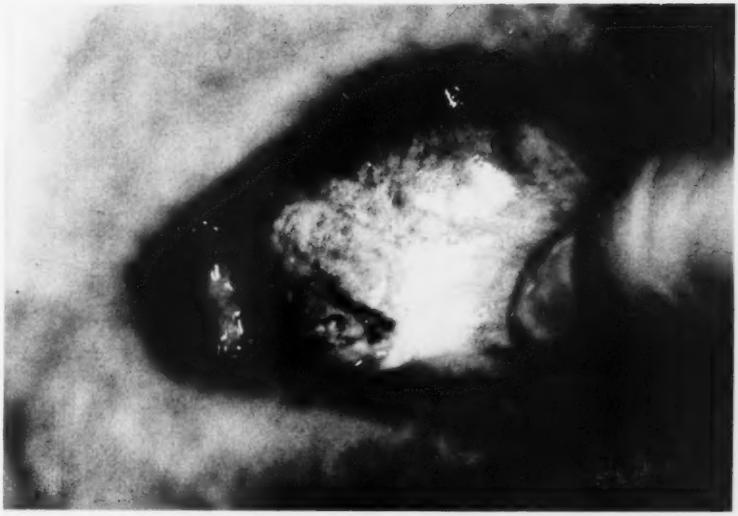

Figure 4. Leukoplakia of the buccal mucosa in the mouth of a heavy smoker, showing rather extensive advanced plaques with ulcerations indicative of early malignancy. (Courtesy of Dr. A. Budner Lewis and Rhode Island Hospital)

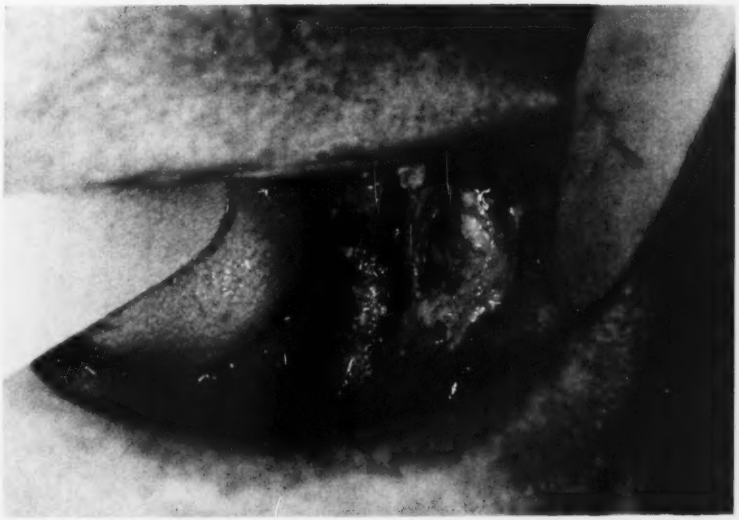

Figure 5. Leukoplakia with ulceration of the oral mucosa in the mouth of a heavy smoker. The lesion may no longer be considered leukoplakia. The lesion is well advanced into the malignant stage, squamous carcinoma. (Courtesy of Dr. A. Budner Lewis and Rhode Island Hospital)

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TABLE 1. *Differentiation of lichen planus and leukoplakia of the oral cavity*

	Lichen planus	Leukoplakia[12]
1. Contributory factors	Often associated with nervous tension or instability.	Found at sites of irritation (sharp, ragged edges of teeth, ill-fitting dentures, et cetera) or of previous irritation, such as the site of a former syphilitic gumma. Usually associated with poor dental hygiene and excessive smoking.
	Found as frequently in men as in women.	More common in men than in women.
2. Site of lesions	Found on buccal mucosa, alveolar ridges, dorsum of the tongue, and palate. May or may not be accompanied by cutaneous lesions. Skin lesions, when present, are most numerous on flexural aspects of forearms and wrists, and inner surfaces of thighs and knees. There may be alopecia if scalp lesions are present.	Most common site in the oral cavity. May be found on the mucous membrane of the other parts of the body, chiefly the vulva.
3. Gross morphology	The basic lesion is the violaceous filiform network and meshes of lacework formations on the buccal mucosa, appearing as small flat-topped angular papules.	Usually present as a leathery thickening of the mucosa, with a pearly silvery sheen. Occurs as lactescent superficial patches of various sizes and shapes which may coalesce to form rather extensive sheets.
4. Extension	No adenopathy is present.	Lymph nodes usually are not involved until the malignant stage is reached.

TABLE 1. *Differentiation of lichen planus and leukoplakia of the oral cavity*—Continued

	Lichen planus	Leukoplakia[12]
5. Histopathology	Hyperkeratosis, increased thickness of the granular layer which is usually missing in the normal mucous membrane. The cells in the granular layer are coarse and well formed. Several rows of these cells are present. Acanthosis is also present, with destruction of the basal layer by the infiltrate from the upper dermis. Lymphocytes are plentiful and invade the stratum Malpighii. The rete ridges on occasion show the "saw tooth" papillae which is characteristic (figs. 9-11).	Epithelial horny pearls or cell nests are common. Hyperkeratosis of the superficial layer of the stratum corium with rete ridges in the Malpighian cells undergoing abnormal, premature, or imperfect keratinization, resulting in a dyskeratosis (figs. 6-8). Neither the hyperkeratosis nor the lymphocytic infiltration is as localized as in lichen planus.
6. Symptoms	May be painful at the onset in the oral cavity. Upon the skin surfaces it becomes very "itchy" and annoying.	Usually not painful until the advanced stages.
7. Terminal picture	After the disease becomes chronic the infiltrate decreases, the plaque-like formations develop verrucose tendencies or may disappear spontaneously. Recurrence is common.	Acute leukoplakia may develop rapidly, become thickened, actually ulcerate, become papillomatous with verrucose appearance and is more apt to become malignant than the chronic type. Traumatic calluses clear up when source of irritation is removed. One out of every fourth case will develop malignant tendencies—squamous cell carcinoma.

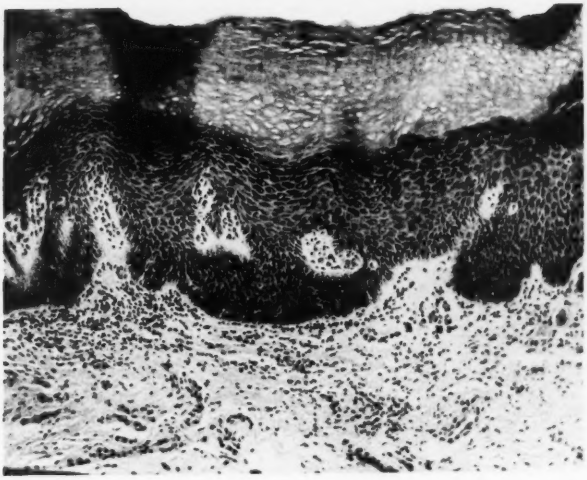

Figure 6. Leukoplakia. The surface epithelium of oral mucosa showing marked hyperkeratosis. The rete ridges appear somewhat irregular, although acanthosis is not excessive. The granular layer is prominent. The basal epithelial cells exhibit hyperchromatism. (× 91) *(Courtesy of the Armed Forces Institute of Pathology)*

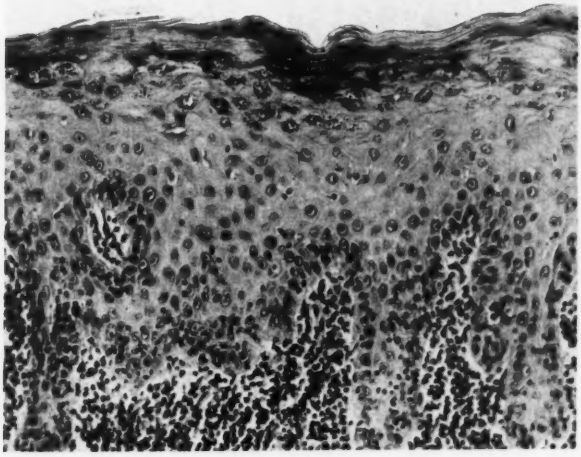

Figure 7. Leukoplakia. The surface epithelium shows hyperkeratosis and parakeratosis and irregular acanthosis. Dyskeratosis is evident by the loss of normal maturation of the epithelial cells, changes in the size and shapes of the cells, and loss of polarity. The basal layer is unbroken and there is no evidence of invasion. The dermis contains a lymphocytic infiltration. (× 146) *(Courtesy of the Armed Forces Institute of Pathology)*

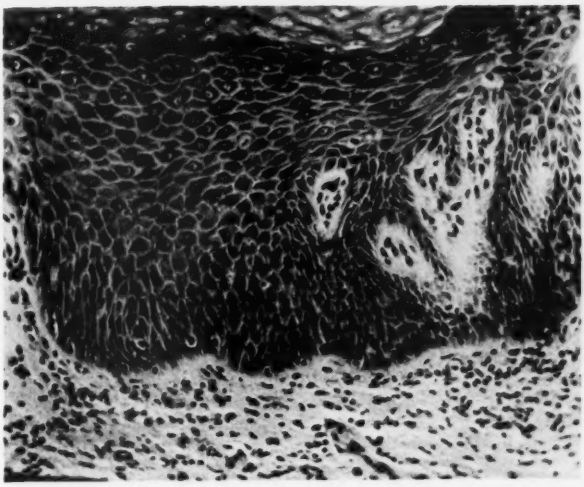

Figure 8. Leukoplakia. Moderate dyskeratosis is evident here as characterized by the hyperchromatism and variations in the cell size and shape. (× 186) (Courtesy of the Armed Forces Institute of Pathology)

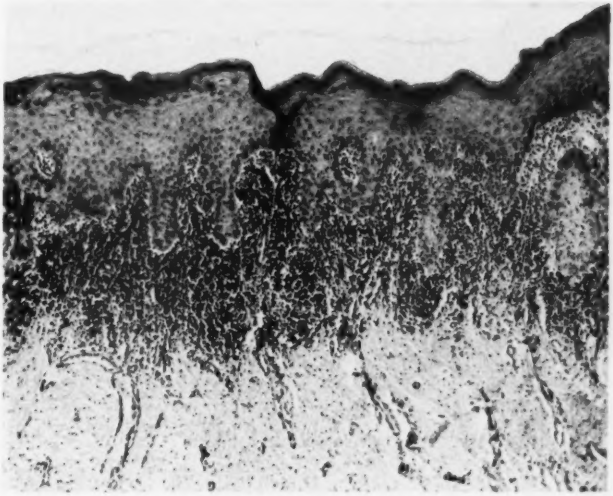

Figure 9. The epithelium in this strip of oral mucosa shows acanthosis with irregular lengthening of the rete ridges. The upper part of the submucosa contains a sharply localized inflammatory cell infiltrate which is in close relation to the basal cell layer. This is consistent with lichen planus. (× 58) (Courtesy of the Armed Forces Institute of Pathology)

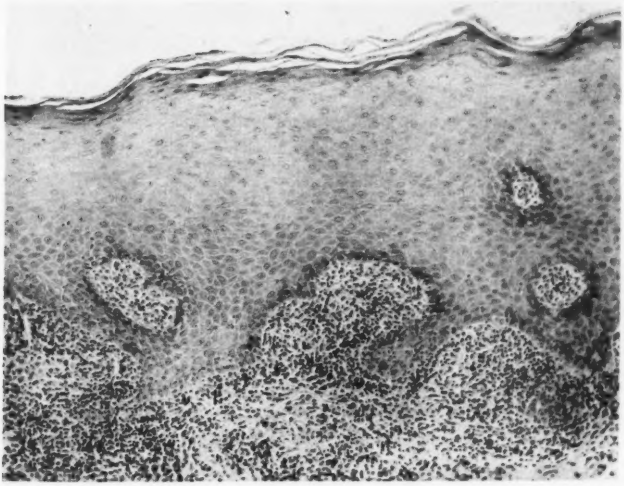

Figure 10. Parakeratosis shown in greater detail with an orderly maturation of the oral epithelium. There is marked infiltration of plasma and lymphocytes in the upper dermis, a condition found in lichen planus. (Courtesy of the Armed Forces Institute of Pathology)

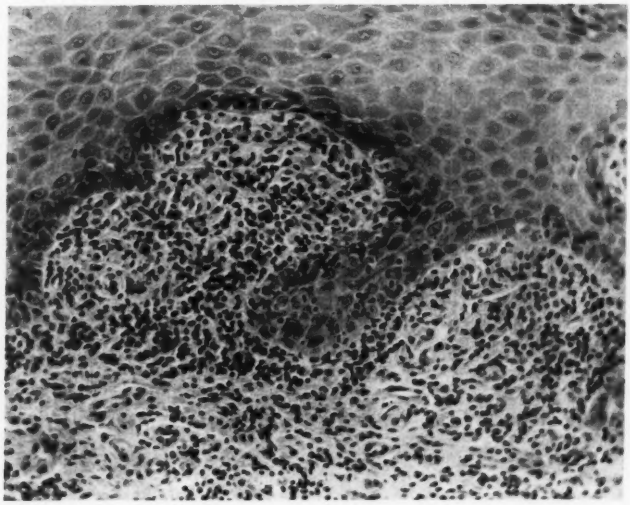

Figure 11. Lichen planus. Characteristic infiltration of plasma cells and lymphocytes in the region of the basal epithelial layer. (× 213) (Courtesy of the Armed Forces Institute of Pathology)

TREATMENT

Treatment of lichen planus is usually unsatisfactory. In former years benefit was claimed in some cases from the administration of arsenic and mercury. Radiation therapy provides no appreciable relief. Radium and ultraviolet rays are equally ineffectual. Curtailment of smoking and moderation in the use of condiments are helpful. Gentian violet (methylrosaniline chloride) (1 per cent) is used widely; a 1:1,000 solution of Zephiran Chloride (brand of benzalkonium chloride) and tincture of Merthiolate (brand of thimerosal) have been tried without success. Recently I have used a topical ointment of fludrocortisone acetate (0.25 per cent)* for treatment of extensions of the dermatologic conditions into the oral cavity, with gratifying results. This material is one of the most potent of the adrenal cortical hormonal agents produced, and it is absorbed readily by the mucous membrane and skin. The use of this ointment in the treatment of other recalcitrant diseases of the oral cavity is definitely indicated. Others[13-15] also reported favorable results in the oral lesions with the topical application of hydrocortisone ointment (2.5 per cent).

Ward[1] called attention to the possible role of avitaminosis A and C in the cause of leukoplakia. In support of this theory it has been noted that patients treated with large daily doses of vitamin A and C (100,000 units of vitamin A and 500 mg of vitamin C) there is a marked improvement in leukoplakia after a period of from 1 to 3 months. Electrodesiccation and fulguration are usually effective in the early lesions of leukoplakia.

Miller[16] stated that "precancerous lesions are best eradicated by surgery rather than by x-ray or radium since sufficient doses to destroy the lesion will also cause radiodermatitis, which in itself is subject to epitheliomatous degeneration at some later date."

Certain dermatologic diseases have oral manifestations which resist all forms of treatment within the scope of the dental surgeon. Under these conditions the dental surgeon should refer the patient to a capable internist or dermatologist for confirmation of diagnosis and treatment.

SUMMARY

Lichen planus and leukoplakia present clinical and histologic pictures which require careful diagnostic procedures in establishing a mutually distinctive diagnosis. Treatment of either disease with topical fludrocortisone acetate ointment (0.25 per cent) has produced gratifying results.

*Alflorone Acetate, a brand of fludrocortisone acetate, was supplied through the courtesy of Merck Sharp & Dohme, Division of Merck & Co., Inc., Philadelphia, Pa.

ACKNOWLEDGMENTS: I wish to thank Dr. Walter F. Lever, Massachusetts General Hospital, and Dr. Lyon P. Strean, Merck Sharp & Dohme, Division of Merck & Co., Inc. I also wish to thank Col. Joseph L. Bernier, Armed Forces Institute of Pathology, for his fine photomicrographs.

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CUTTING CHARACTERISTICS OF DENTAL BURS

As Shown by High-Speed Photomicrography

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LITTLE is known of the cutting action involved in the use of the dental bur for cavity preparation in a human tooth. A better understanding of this mechanism could logically lead to improvement in the design and use of dental rotating cutting instruments. Although considerable information is available on the cutting mechanism of industrial abrasive wheels and milling cutters, this information is not directly applicable to dental instruments because the properties of human tooth enamel and dentin differ greatly from those of other materials. Also, the dental instruments are much smaller than the usual industrial grinding wheels and cutters. The patient's sensitivity to frictional heat, to vibration, and to pain caused by cutting all add direct and unique factors to the design of dental burs.

It was believed that certain basic information on the manner of performance of dental burs would be revealed through high-speed photography of these instruments as they rotate under load in contact with the test materials: human enamel and dentin. The program of high-speed photography was, therefore, initiated as part of a continuing study of rotating dental burs.

EXPERIMENTAL PROCEDURE AND RESULTS

A bur-evaluating machine with accessory timing and controlling features, which had been constructed at the United States Air Force School of Aviation Medicine, Randolph Field, Tex., and

This report concerns part of the dental research program conducted at the National Bureau of Standards in co-operation with the Council on Dental Research of the American Dental Association, the Army and Navy Dental Corps, the Air Force Dental Service, and the Veterans Administration. Mr. Sweeney is Chief of the Dental Research Section, in which Colonel Hudson and Major Hartley were Guest Workers. Mr. Richardson is Chief of the Photographic Services Section.

Col. Hudson and Maj. Hartley are now assigned to the School of Aviation Medicine, Randolph Air Force Base, Tex.

shipped to the National Bureau of Standards, was modified to permit placement of cameras above the specimen. In preliminary investigations, high-speed still photographs were made, employing a flash unit which emitted an intense light two millionths of a second in duration. This light effectively stopped the action of a dental bur in rotation. The light was focused by means of a condensing lens system which increased the illumination by concentrating the light on the bur head. Four- by five-inch film, rated at a speed of ASA 64 Tungsten (American Standards Association exposure index), was exposed by the open-flash method in a standard laboratory camera. The lens opening was *f*4.5. Magnification was approximately 10 diameters.

A number 559 tungsten-carbide bur was photographed cutting a glass microscope slide. The load was 300 grams and the speed of rotation was 5,000 revolutions per minute (r.p.m.) (fig. 1). Interpretation of the photograph indicated that a pulverizing action rather than a true chip formation had taken place. The powdered-glass debris accumulated on the entrant side of the excavation. This phenomenon is a possible explanation for clogging of the bur, in that the debris was not thrown out at the exit side but was carried around to the entrant side of the excavation, where it was occasionally picked up and carried back through the cut. Heat dissipation was hindered by the accumulation of debris at this point, which may be an explanation for chipping which occurs at the entrant side.

Another number 559 tungsten-carbide bur, rotating at 5,000 r.p.m. cutting a cast resin under a 200-gram load, was photographed by the same method. This material was used in previous work as a substitute for dentin.[1] True chip formation can be seen in the photograph (fig. 2). This should be expected when a milling-type cutter is employed in its proper medium. The chips are accumulated on the exit side of the excavation, probably because they are too large to be carried around by the vortex of air created by the revolving bur.

These still photographs were of some value and served to stimulate interest in observing the instruments photographically under dynamic conditions. The single-exposure, high-speed flash method of photographing a rotating dental bur did not permit sequential studies of the cutting action on any particular blade.

A 16-mm high-speed motion-picture camera which operated at a speed of 3,000 frames per second (f.p.s.) was first used in obtaining slow-motion studies of dental burs. Adequate magnification of the small dental burs required the use of an *f*4.0, six-inch telephoto lens with a two-diopter supplementary lens and an extension tube eight inches in length. The camera was mounted on a heavy tripod directly over the precision chuck of the bur-evaluating machine. Exposure, at the rate of 3,000 f.p.s., was

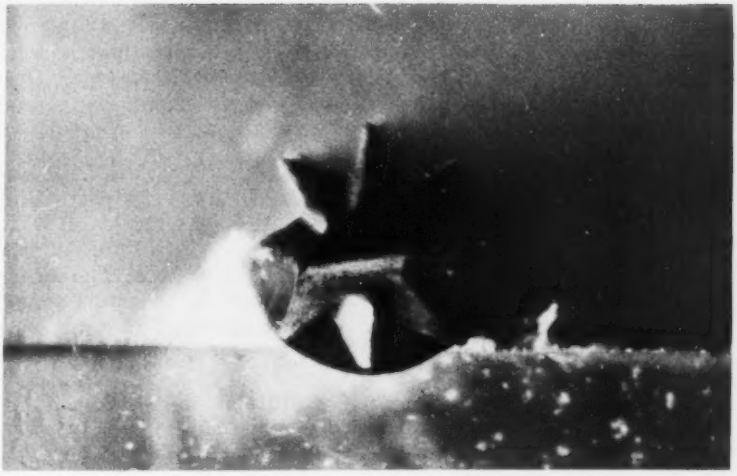

Figure 1. A 2-microsecond flash photograph. Direction of rotation is counterclockwise as viewed by the reader. Carbide bur cutting glass, 5,000 r.p.m., 300-gram load. (Bur diameter approximately 0.05 in.)

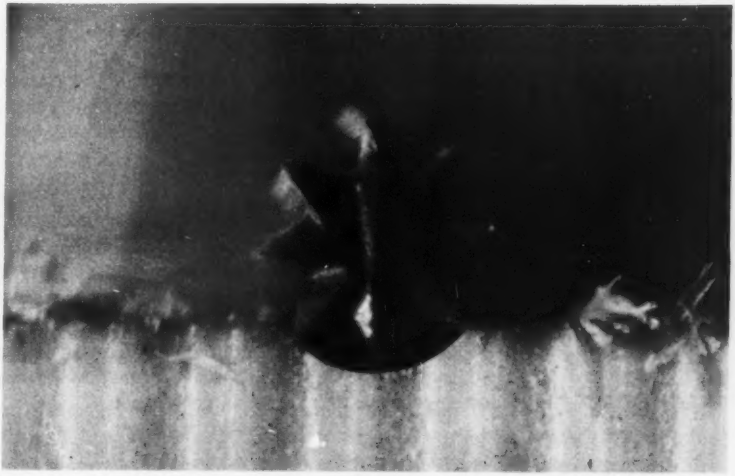

Figure 2. A 2-microsecond flash photograph. Direction of rotation is counterclockwise as viewed by the reader. Carbide bur cutting a dentin substitute (Bakelite cast resin), 5,000 r.p.m., 200-gram load. (Bur diameter approximately 0.05 in.)

1/15,000th of a second per frame. This extremely short exposure, combined with the reduction in effective aperture of the lens due to the extension tubes,* required a high-intensity light source. Eleven 750-watt focusing photoflood bulbs were arranged in a circle above the subject. An internally chrome-plated ring placed around the chuck aided in concentrating light on the bur head.

Reversal-type 16-mm motion-picture film, rated at ASA 64 Tungsten, was used when motion pictures were made for projection. Negative film with the same characteristics was employed when single-frame enlargements were required. A 100-foot roll of film required but 1.25 seconds for exposure at 3,000 f.p.s. The action recorded on the film in this period was extended to approximately three minutes by projection at the normal speed of 24 f.p.s. With the addition to the equipment of two other cameras capable of speeds of 7,000 and 14,000 f.p.s., the three cameras effectively slowed the action of burs rotating at 2,500, 5,000, and 10,000 r.p.m. respectively. These speeds correspond approximately to low, average, and high rotational speeds for operating dental hand pieces.

Additional illumination was required for the faster cameras, since the exposure was only 1/35,000th of a second for the 7,000-f.p.s. camera and 1/70,000th of a second for the 14,000-f.p.s. camera. Four 1,000-watt spotlights that contained parabolic reflectors were used. Their light was further concentrated by means of 2× condensing lenses four inches in diameter (fig. 3). A foot-candle meter reading indicated over 300,000 foot-candles of light was available in an area of two square inches around the specimen. The short interval of time involved in turning on the lights, energizing the camera, and turning off the lights minimized damage to the specimen or equipment from heat.

The most effective studies of the burs rotating in slow motion were accomplished by observing the projected motion pictures.** Some information can be obtained from prints enlarged from individual frames of the motion-picture film, although such prints do not show details clearly (fig. 4). A complete rotation cycle of a bur turning at 2,500 r.p.m. and photographed at 3,000 f.p.s. could be observed in approximately 74 frames. Every fourth frame from a typical rotation cycle was enlarged and printed. Six key pictures were chosen from such a print series for figure 4.

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*The formula $EA = \frac{V}{F} / $ applies. Where EA = effective aperture, V = lens-film distance, $/$ = marked lens aperture, and F = focal length in inches.

**A 16-mm sound film, running approximately 15 minutes and showing some of the burs studied in this work, may be obtained on loan by writing the Office of Technical Information, National Bureau of Standards, Washington 25, D. C.

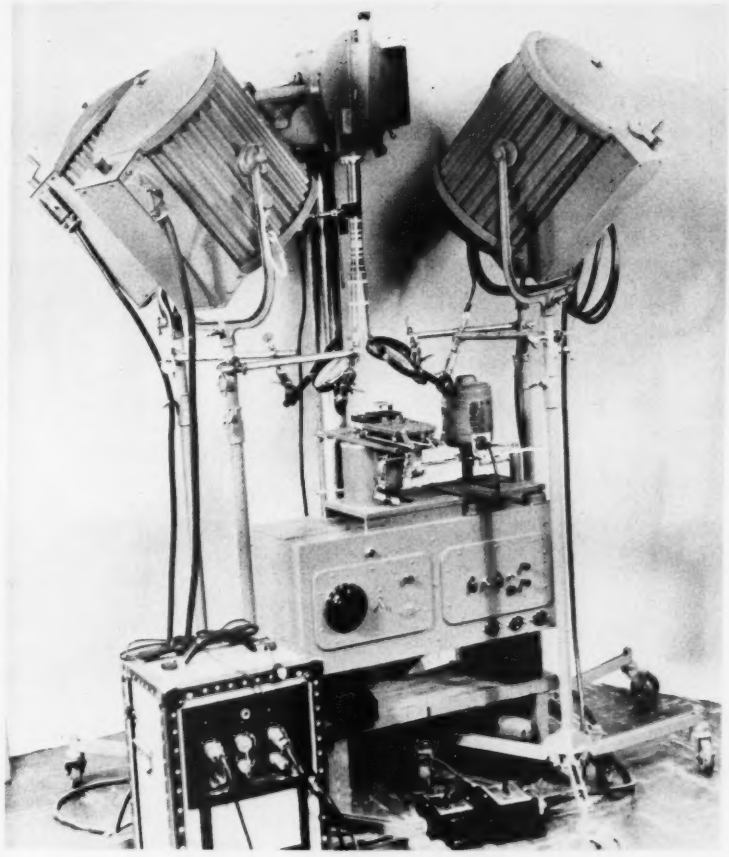

Figure 3. High-speed motion-picture camera and auxiliary equipment for slow-motion photography of rotating dental burs. Below the camera is the bur-evaluating machine; the camera control unit is at lower left.

The top row of pictures in figure 4 shows the sequence of events from left to right as a number 559 eight-bladed tungsten-carbide bur cuts human enamel at 2,500 r.p.m. with a 300-gram load. This bur was 0.003 of an inch eccentric as measured by total runout. It can be seen that only four blades were actually cutting, and that in one phase of its rotation the bur was not in contact with the tooth structure. Some of the debris, finely powdered, followed the vortex of air about the bur and was carried back into the excavation. The bulk of the cut material was deposited at the exit side, where it is seen to have accumulated. Very little cutting was evident. The debris created by the steel

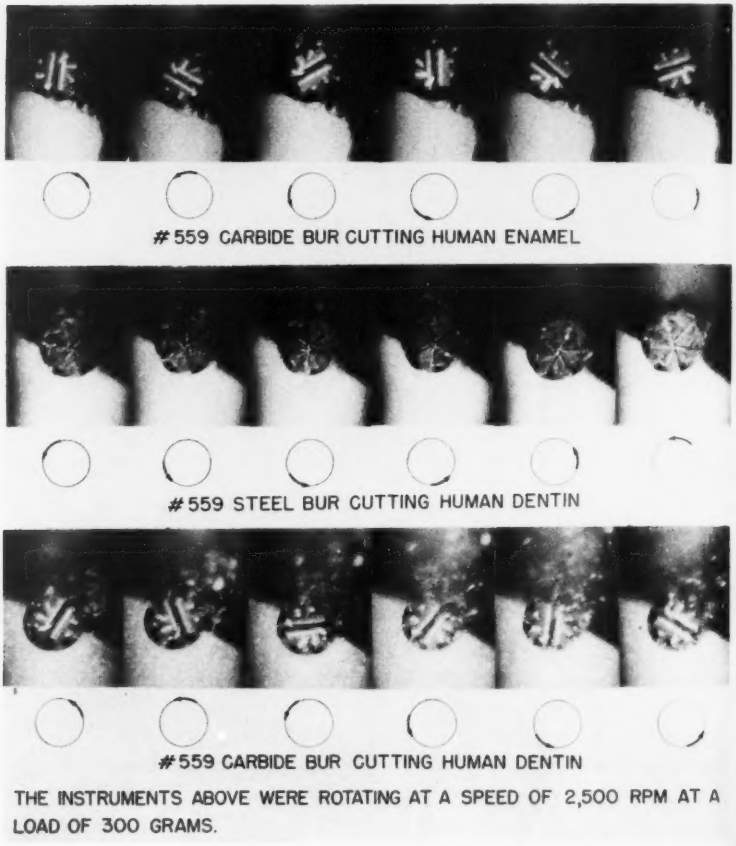
#559 CARBIDE BUR CUTTING HUMAN ENAMEL
#559 STEEL BUR CUTTING HUMAN DENTIN
#559 CARBIDE BUR CUTTING HUMAN DENTIN
THE INSTRUMENTS ABOVE WERE ROTATING AT A SPEED OF 2,500 RPM AT A LOAD OF 300 GRAMS.

Figure 4. High-speed motion-picture 16-mm frames enlarged to show stages in the rotation cycle of typical dental burs. (Bur diameter approximately 0.05 in.)

bur while cutting enamel was so finely powdered that it was barely visible.

A number 559, six-bladed steel bur cutting human dentin was photographed at 3,000 f.p.s. The load was 300 grams; speed, 2,500 r.p.m. The key pictures from a cycle of rotation (fig. 4, middle row) show definite chip formation, although the chips are fragmented and tend to follow the instrument as it rotates. Bounce due to eccentricity is not visible; however, a study of the debris reveals that the cutting was intermittent. The bottom row of pictures in figure 4 illustrates the cutting cycle of a number 559 tungsten-carbide bur in dentin. The chip formation is superior to that seen in the case of a steel bur cutting the same material.

The first photograph in the series shows the bur in a phase of its cycle of rotation, in which a great amount of dentin has been removed and is leaving the excavation. The blades in cutting position at this stage are ineffective, since the instrument is 0.003 of an inch out of round, or eccentric. The fourth photograph in this series shows the bur after rotation of 180 degrees; it can be seen that the blades now in the excavation are cutting effectively. This intermittent cutting action was observed in all eccentric burs studied. Increasing the load to 500 grams accentuated the intermittent action.

In the slow-motion pictures obtained in this investigation, chip formation is revealed in detail as the individual bur blades pass through the excavation. The manner of operation of various types of bur-blade designs can be readily studied as the bur appears to rotate slowly. For example, a chip that is formed by one type of bur blade may be seen to break away from the parent substance, strike the blade ahead, and cause clogging. Fine, comminuted chips, created by a bur that is rotating at too low a speed (2,500 r.p.m. in this case) and thus cutting ineffectively, are seen to follow the vortex of air about the revolving bur. At 5,000 r.p.m., this condition was not improved. At 10,000 r.p.m., a definite improvement in clearance of debris is noted. The effect of improper design is readily seen in some carbide burs, which are observed to cut very poorly even though they do not dull.

It is believed that the superior workmanship of carbide burs in general, noted on comparative microscopic examination of steel and carbide instruments, is a factor affecting the cutting ability of the two types. Curled edges, seen on the steel bur (fig. 5), rapidly dull and break. Roughened edges of the cross-cut areas

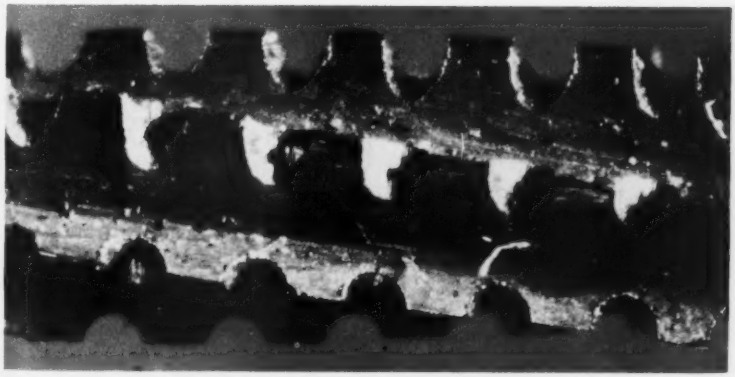

Figure 5. New, unused steel bur. Note the curled and drawn edges. (Bur diameter approximately 0.05 in.)

created during the machining of the bur may cause clogging. These conditions were not seen on the carbide burs examined (fig. 6). The extreme hardness of tungsten carbide permits burs of this material to cut hard substances with less dulling of the

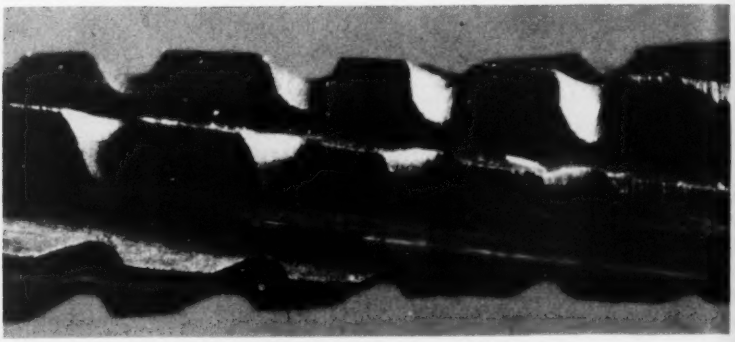

Figure 6. New, unused carbide bur. Note the clean-cut edges and lack of debris-holding surfaces. (Bur diameter approximately 0.05 in.)

blade edges, which present a clean, well-machined appearance. However, neither steel nor carbide burs, which are designed as milling-type cutters, appear to operate efficiently in a material as hard as human enamel. No true chips are seen to form as these instruments cut tooth enamel. Photomicrographs of typical samples of debris from enamel and dentin produced by steel and carbide burs are shown in figure 7. The great difference between enamel and dentin chips is evident. However, no consistent difference is seen between the chips produced by steel and those produced by carbide instruments. Chips produced in dentin by carbide bur brand Y are somewhat larger than those from carbide bur brand X.

CONCLUSIONS

High-speed motion-picture photography of dental burs under actual cutting conditions permits detailed slow-motion study of the action of each bur blade throughout the cycle of rotation.

In enamel, neither steel nor carbide instruments produced true chips, as would be expected from a milling-type cutter. Both steel and carbide burs produced true chip formation and were more efficient in dentin than in enamel.

These photographic studies, when combined with the conventional laboratory testing methods, provide a new and more complete approach to the study and design-improvement of rotating dental cutting instruments.

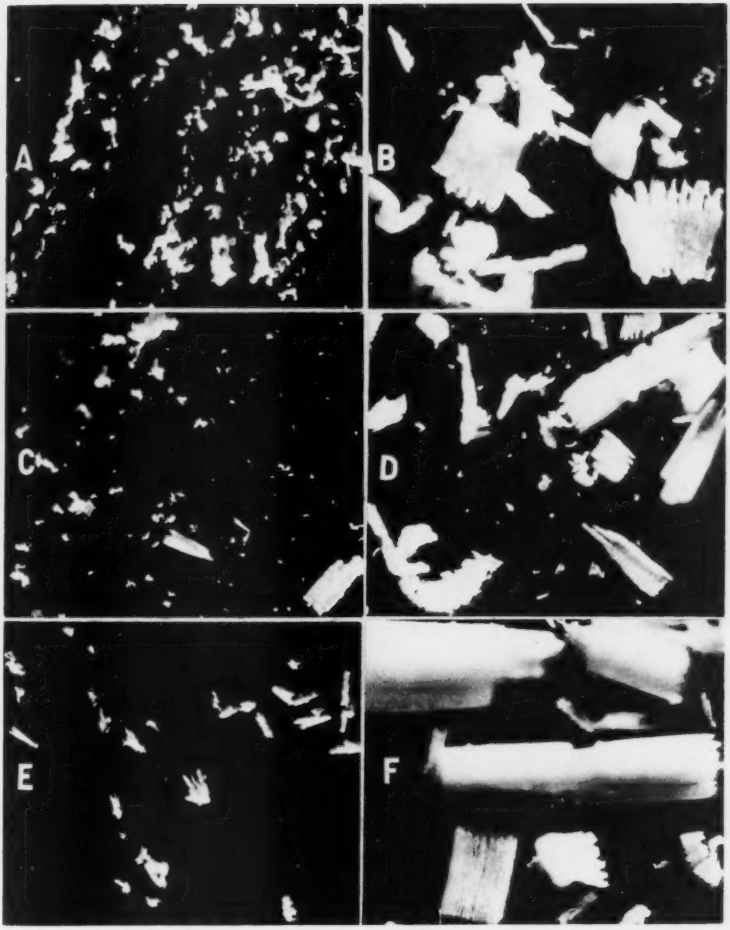

Figure 7. Dentin and enamel chips produced by new number 558 burs rotating at 5,000 r.p.m. under a load of 200 grams. (A) *Steel bur in enamel.* (B) *Steel bur in dentin.* (C) *Carbide bur, brand X, in enamel.* (D) *Carbide bur, brand X, in dentin.* (E) *Carbide bur, brand Y, in enamel.* (F) *Carbide bur, brand Y, in dentin.* (× 51½)

SUMMARY

High-speed still and motion-picture photomicrography has been used in the study of the mechanism of cutting of dental burs. Two-microsecond-flash still photographs were made of dental burs cutting glass and cast resin at 5,000 r.p.m. with a load of 300 grams. Slow-motion studies employing high-speed motion-

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picture cameras at 3,000, 7,000, and 14,000 f.p.s. were made of steel and carbide burs running at 2,500, 5,000, and 10,000 r.p.m. with a load of 300 to 500 grams; the materials cut were human enamel, dentin, and test substitutes for tooth structure. The action occurring within a second was extended to approximately three minutes for study by projection at 24 f.p.s. These methods permitted observations of clogging, intermittent cutting, and eccentric rotation.

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NATURE TAKES ITS COURSE

"Everyone survives all illnesses except his last, often uninfluenced by medical care, not infrequently hindered by medical care, sometimes decisively helped by it. That is the cold unpalatable truth. Fortunately, lay people have little appreciation of this; and I cannot say that we make any great effort to enlighten them. This element of deception may be in the patient's best interests and is not inherently unscientific or immoral, but scientific apostasy sets in when we ourselves fail to recognize when we have only played a passive role. It is often hard for us to realize that the peptic ulcer has healed spontaneously without aid from our dietetic regime of cod and sago. We readily ignore the fact that the good season the hay-fever patient has enjoyed after our course of pollen inoculations is due to the weather. We readily believe that our series of recoveries from myocardial infarction is due, partly at least, to our regime of strict bed rest."

—W. MELVILLE ARNOTT, M. D.
in *Lancet*, p. 783, Oct. 15, 1955

SURGICAL TREATMENT OF PLANTAR CORNS

BEN A. RUTLEDGE, *Lieutenant Colonel, MC, USA*
ALVIN L. GREEN, *Specialist third class, USA*

CORNS occurring inferior to the metatarsal heads are often a major disability, especially for persons whose occupations demand long hours of weight-bearing. Although these growths occasionally are asymptomatic, symptoms usually vary from slight discomfort to inability to bear weight. The incidence is fairly high, and intractable corns frequently receive only minimal and ineffective treatment.

A plantar corn (clavus) tends to lie directly beneath a weight-bearing bony prominence. It is often mistaken for a plantar wart (verruca). When in doubt as to the correct diagnosis, removal of the superficial layers will disclose the true nature of the lesion. A wart is characterized by elongated dermal papillae with enlarged blood vessels, is sharply demarcated by a wall of fibrous tissue, and is tender even on side-to-side pressure. A corn presents a horny, conical core of closely packed epidermal cells arranged in concentric layers, and is primarily painful only on direct pressure. Climatic changes seem to intensify the pain. A possible explanation for this is that the keratinized material contained in a corn, which is hygroscopic, tends to become swollen when the air is moist.

TYPES OF TREATMENT

The literature contains a multitude of reports concerning treatment of plantar warts, whereas only a few reports concern treatment of plantar corns. Many authors erroneously use the term plantar wart in reference to any plantar excrescence, and we believe that the "plantar warts" referred to in many articles are in actuality corns.

The surgical treatments reported vary from simple removal of the corn to more radical procedures such as local excision requiring skin grafting, and plastic operations as described by Ghormley and Lipscomb,[1] Haggart,[2] and Blair, Brown, and Byars.[3] Condylectomy, to remove the cause of a plantar corn by removing the underlying bony prominence, was described by DuVries.[4] A more radical procedure reported by Dickson[5] consists of "removal

From U. S. Army Hospital, Fort Hood, Tex.

of a V-shaped section of the foot, including a wide excision of the wart with the corresponding toe and metatarsal." Key[6] advocated removal of the metatarsal head.

There is no question that treatment of an intractable plantar corn should be directed toward removal of the cause, *i. e.*, the underlying bony prominence.

This article reports a method of surgical treatment for such corns occurring beneath the 2d, 3d, or 4th metatarsal heads of the foot. No originality is claimed. We believe that removal of the metatarsal head and at least one third of the shaft is an adequate procedure for treatment of intractable corns in these areas. Figure 1 illustrates the amount of bone removed. Thirty plantar corns have been treated by this method. The immediate postoperative period for all patients has been excellent; however, our longest follow-up is 18 months.

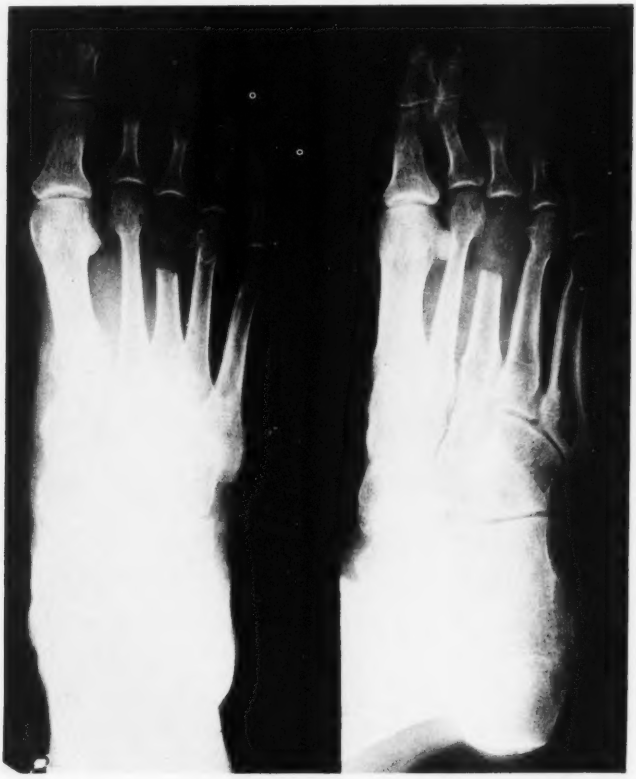

Figure 1. Roentgenogram showing amount of bone removed.

OPERATIVE PROCEDURE

A short dorsal longitudinal incision is made over the offending metatarsal head. The extensor tendons are retracted, the periosteum reflected, and the metatarsal is cut with a bone cutter through the junction of the middle and distal one third of the shaft. The metatarsal head and distal shaft are excised by sharp dissection, and the roughened portion of the distal end of the shaft is rongeured and rasped. No postoperative treatment is given, other than bed rest and elevation of the foot for three to four days.

Most of our patients were able to walk by the fifth day and were relieved of pain from the corn immediately. Service personnel returned to duty in three weeks, on the average. The corns disappeared about the eighth postoperative week. As a group, these patients were notably grateful for the immediate relief obtained.

This procedure leaves no scar on the weight-bearing surface of the foot. The toe recedes one eighth to one fourth of an inch (cosmetically this is hardly noticeable), and the toe still functions. Formation of new corns on adjacent metatarsal heads thus far has not been observed. A five-year follow-up is planned.

SUMMARY

Plantar corns that are intractable to conservative management should be treated by removing the underlying bony prominence. Good results have been observed in 30 cases in which the offending metatarsal head and about one third of the shaft were removed according to a simple technic that is described.

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Clinicopathologic Conference

3415th U. S. Air Force Hospital, Lowry Air Force Base, Denver, Colo.*

CENTRAL NERVOUS SYSTEM BLEEDING AND SPLENOMEGALY

Summary of Clinical History. A 35-year-old white man was admitted to the hospital on 9 April 1956. He was unable to give a good history, and most of the history was therefore obtained from his friends and relatives. For about two weeks prior to admission to the hospital the patient had had a staggering gait, vertigo, and troubles of intellect. On the morning of admission he had great difficulty in walking, with a tendency to fall to the left. The same day he also became nauseated and vomited. According to his mother and sister, the patient had had abdominal pains for the last three or four years. His appetite had been extremely poor for about one year and he had eaten mainly canned food.

Military history revealed that the patient had spent about one year in Korea, returning to the United States two years ago. He spent four years in Germany (from 1948 to 1952). He was an instructor in weapons. He never indulged in alcohol.

Physical Examination. On admission the patient appeared normally developed but chronically ill. The blood pressure was 120/70 mm Hg; pulse rate, 100 per minute; respirations, 20 per minute; temperature, 98°F. On examination of the eyes, nystagmus was noted on lateral gaze. Pupils, fundi, and vision fields were normal. Ears, nose, and throat were negative, and there was no nuchal rigidity. The heart and lungs were normal. Examination of the abdomen revealed a palpable spleen 4 cm beneath the left

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costal margin. It was smooth, firm, and nontender. The liver was not palpable, and there was no abdominal tenderness. Genitalia and rectum were normal. Examination of the skin revealed sparse hair distribution. One spider angioma was noted on the back of the neck. There was no icterus. No lymph nodes could be palpated. Examination of the extremities revealed clubbing of the fingers, and there was slight pitting edema of the legs. Brownish discoloration was noted on the lower parts of both legs. Neurologic examination revealed slurring of speech and marked in-co-ordination. Romberg sign was positive with the eyes open, and the patient had a tendency to fall to the left. The gait was extremely unsteady, also with a tendency to fall to the left. There was no muscular weakness. All the reflexes were hyperactive but equal. No pathologic reflexes could be obtained.

Laboratory Studies. Serologic examination was negative. Roentgenograms of the chest and skull were reported normal. A flat abdominal roentgenogram revealed an enlarged spleen. Blood tests showed a white blood cell count of 4,500/μl with a differential of 60 per cent neutrophils and 40 per cent lymphocytes. Hemoglobin was 9 g/100 ml; red blood cells, 2,810,000/μl; hematocrit, 32 ml/100 ml; corrected sedimentation rate (Wintrobe), 22 mm; platelet count, 37,200. The red blood cells were reported as macrocytic. Coombs' test was negative. Bone marrow aspiration showed erythroid hyperplasia, with a myeloid-erythroid ratio of 1:1.5. No megakaryocytes were seen. A spinal tap was performed; the fluid was xanthochromic, otherwise not abnormal. Liver function tests showed a cephalin-cholesterol flocculation of 4+; thymol turbidity of 7.1; total proteins, 5.4 g/100 ml (2.5 g/100 ml albumin, and 2.9 g/100 ml globulin) (A-G ratio: 0.86). The total bilirubin was 0.9 mg/100 ml, with a direct bilirubin of 0.35 mg/100 ml. Prothrombin time was 75 per cent of normal. Blood urea nitrogen was 15 mg/100 ml. A routine urinalysis was negative. The amount of urobilinogen in the urine was normal; the urine was negative for bilirubin. The urine turned black on standing, and examination for porphyrins by the Watson test was positive.

Course in Hospital. The patient was placed on bed rest and treated for nausea and vomiting. His course was downhill. Headache, slurring of speech, and increased irrational behavior were present. On 13 April the patient became comatose. At this time all his extremities were flaccid. Reflexes remained hyperactive, with a sustained ankle clonus and a positive Babinski bilaterally. Severe nuchal rigidity was present. A repeat spinal tap was again xanthochromic. The patient was given blood transfusions, Meticorten (brand of prednisone), and Terramycin (brand of oxytetracycline hydrochloride). His condition continued to deteriorate, and he began to have convulsive episodes with spasm of the

glottis and difficulty with respiration. An airway was put in place and he was placed in an oxygen tent. The patient died on 14 April 1956 at 1455 hours.

DISCUSSION

Doctor Schneck:* I think we can begin by first looking at the only x-ray of any significance; this simply shows an enlarged spleen, which was palpable in the initial physical examination and through the hospital course. This man was 35 years old, which is significant because that is fairly young to have a fatal illness of the character that his apparently was. He came in on 9 April and was unable to give a good history. There could be several reasons for this: inability to speak, coma, thickness of speech, confusion, or many others. I saw this man one night two days before he died, and from my observation would presume that confusion was the main reason for his not being able to give a good history. Most of the history was obtained from friends and relatives, who observed staggering gait, vertigo, and troubles of intellect in the patient for about a two-week period before he came in. Now, you can pin these symptoms on many things in the central nervous system, and I prefer to wait a few minutes before I tell you what I believe they are from. On the morning of admission they noticed he had difficulty in walking and fell to the left. He also became nauseated, vomited, and then came to the hospital. Past history as given is very brief: abdominal pains for the last three or four years. There is no description of character, location, et cetera, so that one has to speculate about these. He had had a poor appetite for a year and had eaten mainly canned food. He had been overseas in Korea for awhile and then in Germany. Then there is the significant statement that he had not indulged in alcohol.

Now it seems to me that this man had some sort of liver disease tied up with spleen involvement and hematologic disorders. The first question is, does he have cirrhosis? Well, he is 35, which is young for cirrhosis. Generally, the age, according to Cecil and Loeb,[1] is from 45 to 65. There are many causes of cirrhosis, and diagnostic tables give between 8 and 12 causes. Laennec's cirrhosis, which is the most common, can be caused by many things, among them toxins such as carbon tetrachloride and phosphorus. Alcohol is implicated in only about 50 per cent, and less than 10 per cent have a history of hepatitis. Usually, however, there is no known cause. It is true that in the Orient, malaria and other enteric diseases will give a Laennec-type of cirrhosis, but there is no history that he developed any of this in Korea. There are endocrine changes which occur in Laennec's cirrhosis, resulting in a sparseness of hair, and sometimes gynecomastia and testicular atrophy. The reason, presumably, is that the liver cannot detoxify circulating estrogens, or at least does so imperfectly.

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*Capt. Stuart A. Schneck, USAF (MC), Flight Surgeon.

It is interesting that the signs initially can be very vague and can last for several years. Nausea, vomiting, and vague abdominal pain are very common. There is often a low-grade fever. This man, incidentally, did not have fever. There is often vomiting; there is weight loss. Jaundice is seldom a conspicuous feature in Laennec's cirrhosis. The bilirubin, while it may be slightly elevated, is often quite normal in many patients until they go into complete liver failure. Two thirds of the patients with Laennec's cirrhosis have a spider angioma, which this individual had on the back of his neck. Some have scanty body hair, and ascites, while it occurs, is not very common until the disease is fairly advanced. If you can feel the liver, and you can feel it in only about half of the cases, it feels knobby and is tender. In one series, the spleen was palpable in 55 out of 124 cases, and the splenomegaly is due to portal obstruction. Clubbing of the fingers also can occur in cirrhosis. It is not common and is seen in possibly 15 per cent of the cases. Bleeding is a considerable problem and very common in cirrhosis. But it is almost always bleeding from the gastrointestinal tract—either hematemesis or melena—and probably due to the portal hypertension that develops. It also is due to decreased prothrombin, fibrinogen, and globulin, all of which are made in the liver. The flocculation and thymol turbidity tests are usually positive. There is a decrease in albumin and an increase in globulin, and a persistent decrease in albumin is taken as a bad prognostic sign. There is also a macrocytic anemia. You do not necessarily get urobilinogen or bilirubin in urine in cirrhosis, and this patient did not have it.

Briefly, to mention other causes of cirrhosis, there is postnecrotic cirrhosis which, as you know, follows hepatitis; perhaps 5 per cent of all cases of cirrhosis are of this type. I do not think this man had a postnecrotic cirrhosis because he had no history of having hepatitis, although it is a possibility that he could have had an anicteric hepatitis. These people, when sick, are usually quite jaundiced, however, and I think this would rule it out. Also, they frequently have recurrent attacks of hepatitis, which this patient did not have. There is the cirrhosis of hemochromatosis. Seventy-five or 80 per cent of these people have diabetes and are between the ages of 40 to 60 years. There is biliary cirrhosis. Generally, these people are quite jaundiced, and I believe this rules out this type. There is a cirrhosis due to syphilis; he had a negative serologic test. There is a cirrhosis due to parasites, such as Schistosoma; he was in Korea, and so it is a possibility. I do not think it is too likely, however, because he did not have fever, chills, or signs of an acute infection, which is usually found in a parasitic type of cirrhosis. There is the cirrhosis of hepatolenticular degeneration, or Wilson's disease. There is, finally, a cirrhosis which is possible on the basis of cardiac disease; he had no history of cardiac disease.

To get back to our patient, I think it is quite likely that he had a cirrhotic liver. I do not know the specific cause, and I will simply

leave it at cirrhosis. The second thing I would like to discuss is the splenomegaly that he had. Among the many types of splenomegaly there is one called secondary or chronic congestive splenomegaly. Usually these people are under 35. About half the patients have a sudden onset, with gastro-intestinal bleeding. The others only have abdominal discomfort, weakness, and an enlarging spleen; some have jaundice. Some of these people develop a nonicteric type of brownish skin discoloration, and I think that this is the case in this man. His legs were a peculiar brown color. About one third have epistaxis, but other hemorrhage is very uncommon in secondary congestive splenomegaly. There is a normal bleeding time and a normal clotting time. If they bleed from the gastro-intestinal tract, it is on the basis of portal hypertension, generally. Bleeding elsewhere is quite rare. The blood picture in cirrhosis is interesting: you see an anemia which usually is macrocytic but may be microcytic if sufficient bleeding has occurred. There is a leukopenia and a decrease in platelets. In the bone marrow, if you look early, there is a myeloid hyperplasia. If you look a little later, there is a maturation arrest of the bone marrow. And if you look late, you see what we see here, an erythroid increase. Normally the bone marrow has a myeloid-erythroid ratio of about 3 or 4 to 1. In our patient the ratio was 1 to 1.5—a definite reversal, no megakaryocytes being seen.

The prognosis in congestive splenomegaly is extremely variable. It depends upon the initial cause. Usually this is cirrhosis or some intrahepatic obstruction. While it is true you can get portal hypertension from extrahepatic obstruction, it is not common. Patients generally have more bleeding from the gastro-intestinal tract. Another possible cause is portal vein thrombosis. I do not think it applies here, for it occurs in only 2 per cent of cases of cirrhosis, which is its most common cause. Malignancy will rarely obstruct the portal vein by pressure or direct extension of tumor cells into the vein. An endophlebitis will rarely obstruct the portal vein; thrombocytosis will occasionally do it, such as in polycythemia vera. There people have permanent ascites, fever, and bleeding, more so than people who have intrahepatic obstruction. I would say at this point that this patient's cirrhosis gave him a secondary congestive splenomegaly with pancytopenia, macrocytic anemia, and reversal of myeloid-erythroid ratio in his marrow.

I would like to turn now for a moment to the interesting finding of the positive porphyrin test. I understand that his urine stood on the table in the laboratory for awhile and then turned black. Now this does not make a diagnosis of porphyria. Porphyria is a peculiar disease which is thought to be an inborn error of metabolism. It is divided into two groups: a congenital or erythropoietic type, and a hepatic group which can be further subdivided. Circulating in the body normally and found in urine and feces is a certain amount of a substance called coproporphyrin. Liver disease, certain toxicities such as from barbituates and alcohol, nervous system disease, and anemia can produce

a secondary coproporphyrinuria, but this is not porphyria, and the urine does not turn black. There are other porphyrins, such as uroporphyrin and porphobilinogen. Uroporphyrin and/or porphobilinogen must be found in the urine in order to presume a diagnosis of porphyria.

These substances, however, are found not only in porphyria but in advanced liver disease, Hodgkin's disease, carcinomatosis, nervous system disease, and in some infections. The uroporphyrin is a photosensitive pigment; when exposed to light it will turn black. Porphobilinogen is a colorless substance, which when exposed to light breaks down to porphobilin, which is also a dark or black pigment. Briefly, the symptoms of porphyria are severe weakness, muscle paralysis, severe neuritic-type pain, abdominal pain, mental changes of a type of hysteria, or even a psychosis and convulsions. It is my feeling this man did not have porphyria, but simply that he had a positive porphyrin test in his urine on the basis of severe liver disease. His liver could not metabolize these porphyrins.

Now I would like to turn to the neurologic symptoms that this man had. I think they were due to cerebellar disease. In cerebellar disease you get three main groups of symptoms: ataxic symptoms, asynergic symptoms, atonic symptoms. The asynergic symptoms simply mean that there is a disassociation of movement, synergistic muscles are not working properly, and motions are not smooth. If this asynergia is pure, it generally is not accompanied by a sensory deficit. This differentiates it from posterior column disease, in which there would be loss of pain and vibration senses. This decomposition of movement is unrelated to vision. The Romberg test is positive in cerebellar disease whether the eyes are open or closed. You will notice this man had a positive Romberg with open eyes. The ataxia is due to a dyssynergia because the muscles just are not working smoothly together. In the acute cases there is a marked weakness. There is also an intention tremor. There is no mention of this here, so I do not know whether he had it. There is a sign called "cerebellar speech." It is slow, hesitant, and later becomes quite dysarthric. The reason for this is again an in-co-ordination, or dyssynergia, between the muscles of the pharynx and larynx. This man had a peculiar type of speech. There is falling, generally to the side of the lesion.

I think the question might be raised, what kind of a lesion did he have within his brain? Was it hemorrhage, was it cerebellar artery occlusion, was it tumor, was it aneurysm, was it brain abscess? Cerebellar hemorrhage without cerebral hemorrhage was found in 0.0058 per cent of 17,257 autopsies in one series.[2] I think that you can safely say that cerebellar hemorrhage without cerebral hemorrhage is quite rare. We do not have much indication that this man had a cerebral hemorrhage. He had xanthochromic spinal fluid, but all that this means is that there was a certain amount of blood in the spinal fluid for at least 12 hours. How common is cerebellar hemorrhage even in the face of cerebral hemorrhage? It is quite uncommon; one report says 10 times

in 300 cerebrovascular accidents. How common is cerebellar artery occlusion? Not too common, but there are usually characteristic symptoms. There are three main arteries that go to the cerebellum: the superior cerebellar, the anterior-inferior cerebellar, and the posterior-inferior cerebellar arteries. I do not think that this man's symptoms fit any of the syndromes which are described, because loss of pain and temperature sensations, Horner's syndrome, and vocal cord and palatal paralysis usually are present.

Did he have a tumor? I think he did, because the symptoms fit those given by an expanding lesion and are usually rapidly progressive. I think this was a metastatic tumor. The symptoms are rapidly progressive in metastatic tumor. Headache in cerebellar tumor is extraordinarily common. This man complained bitterly of severe headache which was not relieved by any analgesics. Xanthochromic spinal fluid is found frequently in cerebellar tumors without evidence of gross bleeding. Frequently there is a choked disk, but this man did not have one. Of course there is vomiting. Nystagmus occurs in cerebellar lesions only when there is pressure on the brain stem. I think that is what was happening to this man. I think his terminal episode, when he became generally flaccid, when he developed nuchal rigidity, when he began to have convulsive episodes with glottal spasm and respiratory difficulty, was herniation of the medulla down through the foramen magnum. In tumor within the brain there is generally, as I said, an increased pressure. I do not know if he had one or not, for there is no mention of this. There is often an increased protein and normal cell count in the cerebrospinal fluid. I do not think he had a primary tumor, because they are much more common in children, and I could not tie in his liver and spleen disease with a primary tumor.

I do not think he had aneurysm, which is also an expanding lesion. It gives more cranial nerve symptoms than he had, and generally occurs in the base of the brain rather than within the substance of the brain. Visual-field defects are more prominent. I do not think he had a brain abscess, although this is a diagnosis which frequently is made only at autopsy. You would think that at some time he would have had an episode of fever or chills or some signs of infection, and I do not know how you could tie up these other diseases with a brain abscess.

So far I have made two diagnoses: cirrhosis and congestive splenomegaly. I also said that he had tumor within his brain, and it is possible he had metastatic tumor with bleeding also in his cerebral hemispheres. But I have not located the primary tumor. Now, does he have a primary liver tumor? Well, this is a very rare bird. It occurs mostly in the Orient, where it accounts for about 10 to 20 per cent of primary tumors. There are two types. There is the hepatoma, which is a widespread or diffuse tumor and constitutes 80 to 90 per cent of all primary hepatic tumors; and there is the cholangioma, which is primarily a biliary canaliculus tumor. There is generally pain over the liver and an enlarged liver; it is seen in older people, but the symptoms are like

cirrhosis, particularly if it is a hepatoma. Does he have a silent tumor somewhere in his abdomen, possibly the body of the pancreas? I could not say.

I think I will stop here and say that my diagnoses are: cirrhosis of the liver, with possibly a hepatoma or some other malignancy within the abdomen; cerebellar metastasis, primarily to the left cerebellum and possibly to the cerebral hemispheres; and congestive splenomegaly.

Doctor Fravel: I would like to mention that the spinal fluid did contain blood, besides being xanthochromic.

Doctor Strickland:* The point I want to raise is whether a cerebral arteriogram under local anesthesia could have been performed to establish the exact cerebellar lesion. It probably was a posterior cerebellar artery thrombosis.

Doctor Grabb:** I think that abdominal pain, splenomegaly, anemia, and central nervous system disturbances are frequently seen in acute intermittent porphyria, and this could be the case in this patient.

Doctor Schnack: This patient did not have very severe pain anywhere besides the terminal headache, or at least it is not mentioned. He had no paralysis and no weakness except terminally. These are quite major symptoms in porphyria. As far as the posterior cerebellar artery syndrome is concerned, the onset usually is sudden, although it can come on slowly. There are sensory changes which are quite marked, and this patient did not have them. He did not have Horner's syndrome. He had no loss of pain and temperature sensation. I do not think I could include this in the diagnosis.

Doctor Bortz:*** I would like to make a few comments on cerebellar disease. I think there are at least four significant symptoms in this patient that cannot be accounted for by cerebellar disease. These are the changes in intellect, the nuchal rigidity, the convulsions, and the pyramidal signs.

It has been recently reported[3] that there is a leukemia with a normal bone marrow in the preleukemic state. This is usually the monocytic type that can progress rapidly. With leukemia of this type we see splenomegaly and pancytopenia. In fact, most of these patients in the preleukemic state are first seen with pancytopenia. I would also consider this diagnosis.

Another point I would like to mention is the cavernous transformation of the portal vein. This is one of the causes of Banti's syndrome. It is usually seen in young patients. They often have the same abnormal liver function tests as this patient had.

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*Capt. William M. Strickland, USAF (MC), Surgical Service.
**Capt. William C. Grabb, USAF (MC), Surgical Service.
***Capt. Alan I. Bortz, USAF (MC), Medical Service.

The final episode, however, in our patient, was most likely due to bleeding, although a tumor in the central nervous system is certainly a possibility.

Doctor Strickland: In patients with cavernous transformation of the portal vein who have been operated on, cirrhosis has been very minimal because the arterial blood supply was still good. There are difficulties due to gastro-intestinal hemorrhage and portal hypertension in this disease.

Doctor Schneck: In regard to the comment about cerebellar disease, it is perfectly true that in general we do not have convulsions and nuchal rigidity in pure cerebellar disease. However, in this case these symptoms were only seen terminally, and they could be due to herniation of the cerebellar tonsils or to a terminal bleeding episode. Dulling of intellect, however, is seen in cerebellar disease.

Clinical diagnoses:

1. Cirrhosis of the liver
2. Hypersplenism
3. Secondary thrombocytopenia
4. Central nervous system bleeding

Dr. Schneck's diagnoses:

1. Cirrhosis of the liver
2. Malignancy in abdomen, with cerebellar and cerebral metastasis
3. Congestive splenomegaly

PATHOLOGIC FINDINGS

Doctor Czernobilsky: Significant gross findings of the post-morten examination were as follows:

Scattered areas of ecchymosis were present on both arms. Ankles showed grade I pitting edema. There was a brown discoloration of the lower parts of both legs. The mediastinal and chest organs were not remarkable. Numerous large, tortuous veins were present in the fat of the abdominal wall. The peritoneal cavity did not contain any fluid. The liver weighed 1,115 grams. The surface was markedly nodular and brown. On cut section the normal architecture was not recognized. The whole surface was transformed into a finely nodular, gray-brown tissue. The spleen weighed 530 grams. The surface was blue to purple. No adhesions were present. Cut section revealed a dark purple surface. The stomach presented a round, indurated lesion at the pylorus on the greater curvature. This had the form of an ulcer, with elevated, indurated borders, and measured 1 cm in diameter. Both kidneys were enlarged. The right kidney weighed 250 grams; the left, 370. The capsules stripped with ease, and no gross abnormalities could be found on cut section. The other abdominal organs were not remarkable. The brain weighed 1,620 grams before fixation. A diffuse

subarachnoid hemorrhage involved the whole surface of the cerebrum, and on cut section scattered petechiae were present in the white substance of all the lobes. On cut section of the cerebellum, the center part, the left side, and part of the right side presented one large hemorrhagic area, with destruction of cerebellar substance (fig. 1).

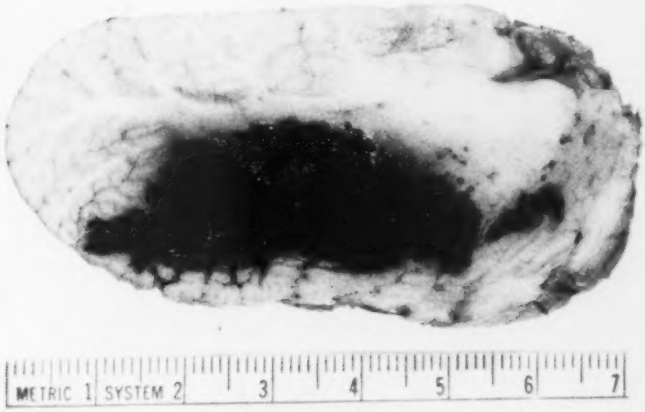

Figure 1. Hemorrhage in cerebellum.

The microscopic examination of the liver showed a distortion of the normal architecture. Numerous pseudolobules were seen, surrounded by large fibrous bands. Throughout the liver there was an increase in connective tissue, proliferation of bile ducts, and lymphocytic infiltration in portal areas (fig. 2). The liver cells contained a brown pigment, which, with special iron stain (potassium ferrocyanide stain), was found to be iron pigment (fig. 3). The spleen showed severe congestion and a decreased number of malpighian bodies. A small amount of scattered pigment positive for iron was also found. When stained with the routine hematoxylin and eosin stains, the pancreas was found to be normal. The special iron stain revealed a small amount of iron-positive granules scattered within the cytoplasm of many acini and occasional cells in the Langerhans islets (fig. 4). All the other parenchymal organs, as well as muscle, were stained with iron stain. The bone marrow contained a small amount of hemosiderin. One cervical lymph node was also positive for hemosiderin. The lesion of the stomach was an early adenocarcinoma which did not penetrate beyond the muscularis mucosae. Microscopic examination of the brain confirmed the subarachnoid hemorrhage, petechial hemorrhages throughout the white matter, and a severe hemorrhage and necrosis of the cerebellum. There was no evidence of tumor or vascular occlusions in numerous

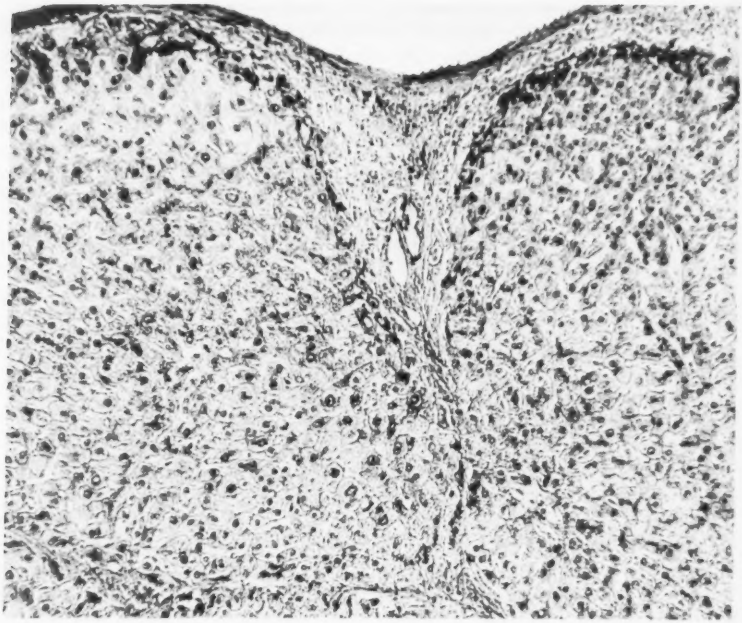

Figure 2. Section of liver showing cirrhosis. (Trichrome stain, × 95)

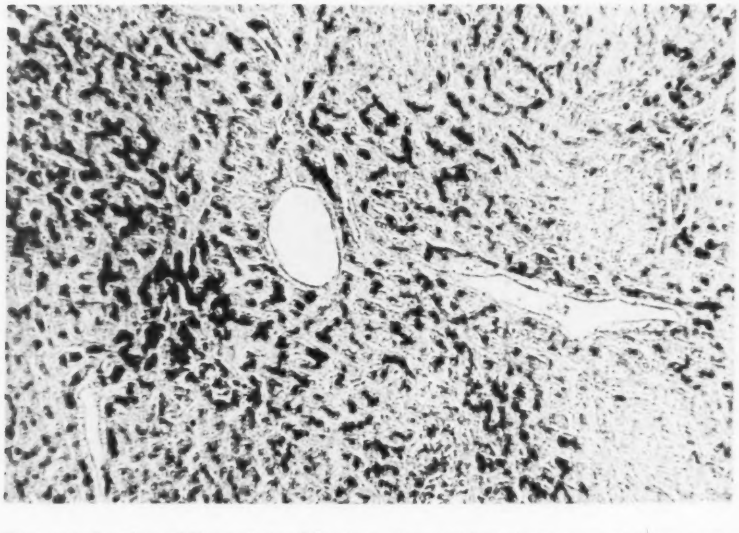

Figure 3. Section of liver stained for iron. Hemosiderin is present in liver cells. The distribution is diffuse. (Potassium ferrocyanide stain, × 95)

sections. On microscopic examination, all the other organs, including the kidneys, were essentially normal

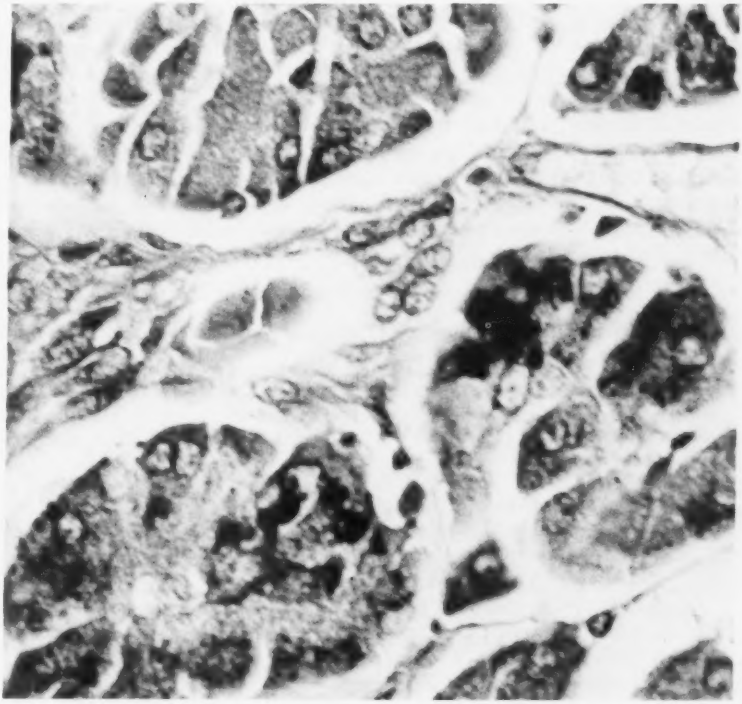

Figure 4. Section of pancreas stained for iron. Heavy hemosiderin granules are present in acini. (Potassium ferrocyanide stain, × 950)

This case can be classified as an early idiopathic hemochromatosis. The hemosiderin distribution in the liver is characteristic of this disease. The pigment is very abundant and is mainly found within the liver cells and not in the reticulo-endothelial system. There is cirrhosis, with formation of numerous pseudolobules surrounded by large bands of fibrous tissue. There is hemosiderin in the pancreas, although in this case there was absence of fibrosis. The spleen and bone marrow only have a small amount of iron pigment. All these changes have been described in hemochromatosis, and cannot be explained on the basis of a simple Laennec's cirrhosis with increased hemosiderin in the liver. The reason that this patient did not develop the typical clinical picture and a very widespread distribution of iron in all the tissues is that he died at an early stage of his disease.

We do have difficulty placing the thrombocytopenia which caused the cerebral and cerebellar bleeding in the picture. Thrombocytopenia

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has been described in hemochromatosis.[4] One explanation would be hypersplenism. The bone marrow obtained at autopsy, however, does not look like the bone marrow in hypersplenism. In contrast to the peripheral smear obtained during the patient's stay in the hospital, the autopsy specimen is hypoplastic. We do think that this latter specimen is more reliable than the first one. In hypersplenism the bone marrow is rather hyperactive, and there should be an increase, or at least a normal number, of megakaryocytes. Although we cannot rule out the possibility of hypersplenism, the action of a chemical depressant on the bone marrow should be borne in mind. The severe anemia suggests long-standing bleeding, which had been going on for some time before his admission. Gastro-intestinal bleeding is a good possibility here. Hemochromatosis alone cannot explain an anemia of such a degree.

Doctor Friedman:* Were the skin lesions investigated any further?

Doctor Czernobilsky: Unfortunately, no skin sections are available.

Doctor Gipson:** Did the carcinoma of the stomach originate in an ulcer?

Doctor Czernobilsky: No. There was no evidence of an ulcer in the sections. This was a well-differentiated, mucus-secreting adenocarcinoma.

Pathologic diagnoses:

1. Early idiopathic hemochromatosis
2. Cirrhosis of the liver (due to hemochromatosis)
3. Congestive splenomegaly
4. Thrombocytopenia (due to hypersplenism or chemical bone-marrow depression)
5. Subarachnoid, cerebral, and cerebellar hemorrhage due to platelet deficiency
6. Adenocarcinoma of the stomach

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**Capt. Bernard F. Gipson, USAF (MC), Chief, Surgery Service.

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PROGRESS IN AEROMEDICAL EVACUATION

L. RENDER BRASWELL, *Colonel, USAF (MC)*

AEROMEDICAL evacuation today stands at the threshold of new developments. Turboprop and jet-powered aircraft are soon to shrink our planet by shortening travel time, and evacuation activities will increase in comfort, speed, and convenience. Already, the familiar C-47 and C-54 types of patient carriers with their crowded litter tiers have been supplanted in domestic and overseas service by larger, faster, and more comfortable aircraft. Because the military practitioner who must transfer a patient to another hospital has little opportunity to inspect the evacuation aircraft during its short pickup stop, this article describes the scope and the methods of aeromedical evacuation.

Historically, organized evacuation of casualties from the battlefront came well before aviation appeared. Baron Larrey, surgeon-in-chief of Napoleon's Grand Army, recognized the importance of speedy evacuation and put the first horse-drawn ambulance into use. This unit became known as the flying ambulance,[1] because it was so much faster than any other means of transporting the sick and wounded at that time.

Military aviation is older than is generally realized. However, it is well known that the balloon was used in our war between the states for observation and the direction of artillery fire. This soon led to the employment of the balloon as the first air-borne patient carrier. Armstrong[2] reported that the first use of aerial means to transport patients occurred during the siege of Paris in 1870. At that time observation balloons removed 160 patients from the city.

An old medical admonition which often appears on the editorial pages of present-day medical journals says, in essence: "First be sure you do no harm." The need to re-emphasize this ancient principle seems to stem from the introduction of the imposing number of new therapeutic items developed in the past few years —the sulfas, the antibiotics, the antihistamines, and so on through the newest group—the ataractics.

From Military Air Transport Service, U. S. Air Force, Washington 25, D. C.

In the aeromedical evacuation operations of the Military Air Transport Service (MATS), this basic safety principle is always kept in mind. In over six years since assuming military patient movement responsibility, MATS has transported well over a third of a million patients, losing only two due to aircraft accident. This indicates a flying safety record which is most impressive when compared with the fatality rates for other modes of patient transportation.

Another safety matter of constant concern is communicable disease. It is generally believed that air travel increases the threat of spreading contagious disease. An exposed person might complete a long journey before symptoms appear. Because of modern therapy, however, very few patients need to be evacuated during the infectious stage of communicable disease. Patients in the MATS transport system have usually been under medical control before we receive them. All are screened by a physician to assure transportability from every standpoint. The physician prescribes any necessary special precautions to apply during flight. He excludes patients in the infectious stage of quarantinable disease. The flight nurse has complete authority to exclude passengers from any patient flight. Standard isolation technics, such as the use of cubicles and segregation of wastes, are applied in flight and continued until arrival at destination hospitals.

Substantial numbers of patients with pulmonary tuberculosis are still transported. An observation which tends to confirm that our defenses against communicable disease afford the patients and medical teams protection consistent with best present-day practice was made recently by a senior Public Health Service medical officer who made a transatlantic air evacuation flight to observe our methods of handling tuberculous patients. After the flight he stated: "With the types of tuberculous patients that were being evacuated, precautions taken while in transit seemed to be quite adequate both as to their individual care and to minimize hazards of infection of others . . . patients or attendants."[3]

Briefly, the system operates as follows. Patients from overseas travel by MATS aircraft to conveniently located domestic ports of aerial debarkation. Our domestic system moves them from the ports of entry to hospitals designated by the Armed Services Medical Regulating Office.

Movement control centers at specially chosen locations promote effectiveness and economy. These centers are located throughout the transport system. Presently, six centers cover medical facilities within their geographical areas in the domestic system. They schedule the movement of patients and effect the most economical utilization of aircraft. They control the dispatching of 30 specially designed flying hospital wards and dispatch

planes consistent with the urgency of the patient movement. If the hospital commander describes the need as urgent, as in a life-and-death case, the airplane proceeds immediately to move the patient. When the medical facility requests priority movement, the flight is scheduled within 24 hours. Even routine patients must be air-evacuated in less than 72 hours.

When MATS became responsible for transporting Department of Defense patients by air, it was forced to use modified cargo aircraft for completion of its mission. In recent years the medical staff has gained membership on the Aircraft Configuration Board, which studies and makes design recommendations for projected aircraft. This membership ensures that specifications for new cargo and personnel transport airplanes incorporate the requirements peculiar to patient transportation. As a result, three new transport types suitably adapted at time of delivery have since joined the MATS fleet: the four-engine Douglas Liftmaster (C-118), which flies patients from Europe to the United States; the four-engine Boeing Stratocruiser (C-97), which flies the Pacific routes; the four-engine Lockheed Super-Constellation (C-121C), which covers the southern routes to Puerto Rico and Panama; and the two-engine Convair (C-131A), which operates within the continental limits of the United States. This last airplane demonstrates two significant "firsts." The Convair is the first to come from the factory especially constructed for patient transportation. As employed in MATS, it is the first airplane to be wholly restricted to aeromedical evacuation use. It incorporates the features that many years of extensive observation and experience have proved essential.

Some of these features, which now are also built into the other new transports mentioned above, are as follows: Vertically suspended litter assemblies may be adjusted to permit variable spacing, allowing patients to be more accessible to the medical crew, with improved ventilation and heating (fig. 1). Adjustable, suspension spacing permits maximum or minimum loading and better cushioning against normal flight motion and vibration. Modesty curtains, with rods appropriately fixed, may be completely drawn around each litter or each tier of four litters (fig. 2). The cabin heating system can cope with fluctuating temperatures and distributes heat uniformly throughout the cabin. Fresh-air vents facilitate rapid air exchange. The exterior coating of fuselage, a solar heat-resistant paint, reduces cabin temperatures while on the ground. Interior insulation reduces the noise level within the cabin. Rheostated interior lighting is sectionalized. Lighting of desired intensity may be supplied individual litter tiers for patient care, while tinted windows reduce sunlight glare.

Figure 1. Interior of C-131A (Convair) showing hospital ward appearance and depicting adjustable litter assemblies, rearward-facing seats, sectionalized lighting, and chest respirator equipment.

Rearward-facing seats are able to withstand high decelerative forces, enhance comfort and safety. They are light, easily removable, and may be stowed, thus permitting flexibility in loading with litter patients. Medical personnel are seated so as to obtain the best view of their patients. Flight and medical crew members are accommodated with rest facilities adequate for long trips.

The interior of the aircraft has stainless steel or aluminum fittings, which are easy to clean and painted so as to present a cheerful hospital-ward atmosphere. A scuff board extends from the floor to window level. The deck covering further contributes to the ward atmosphere, yet it can sustain the wear of capacity loads and has a nonskid safety surface. Because the cabin is

Figure 2. Interior of C-131A (Convair) showing cockpit in background, rearward-facing seats, and compartmented litter tiers with adequate space for nursing care and patient comfort in flight.

pressurized elaborate oxygen systems are dispensed with, and low-pressure walk-around kits are used for therapy or emergency. Medical personnel communicate with patients or flight crew over a modern intercom system equipped with loudspeakers.

The crew enter and exit at the front of the aircraft, while patients board and debark at the rear, away from the confusion and noise of ground operations.

The new MATS galley, which will fit into any MATS transport, includes an electrical warming oven, hot cups, and circulating air refrigerator (fig. 3). This galley is used to serve patients with precooked frozen meals, which are preferred for our purposes. The oven assembly is removable for cleaning or servicing.

Until recently, one of the major problems had been the movement of patients in respirator equipment. Because the large tank-type respirator weighs around a thousand pounds and operates

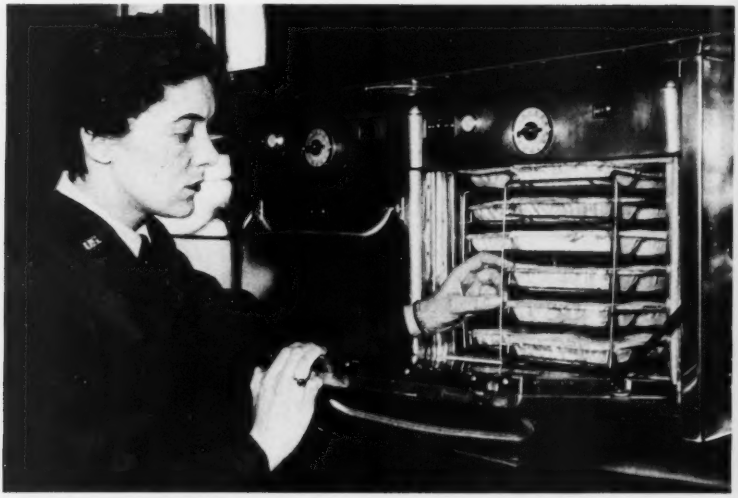

Figure 3. MATS flight nurse uses a refrigerator and electrical warming oven in galley, from which patients are served precooked frozen meals in flight.

on normal 110-volt alternating current, it presented many loading and operating difficulties. The answer, supplied by the Air Force School of Aviation Medicine, Randolph Field, Tex., is a portable, full-body, half-tank respirator. This unit has demonstrated by vital capacity measurements that it can provide adequate ventilation in totally apneic patients. Operating normally on regular household current, it weighs less than two hundred pounds and may be easily handled by a few people. The military metropolitan-type ambulance will accommodate it, where it operates from its own batteries. Loading aboard the aircraft no longer presents a major problem. In the airplane, it fits easily into a normal litter tier, and with its rectifier it operates from the 24- to 28-volt aircraft current. Should all power operation fail, the hand-operated bellows maintain passive respiration at any desired pressure (fig. 4).

Also modified for operation within the aircraft are other hospital items such as aspirators, incubators, and resuscitators. Added to this is a compact new nursing kit, evolved and developed through experience, providing all medications normally required for in-flight nursing care.

In regard to survival equipment, the latest type of life vest, designed to our specifications, will float a patient wearing any type of cast and has a helicopter harness for easy pickup. It is easy to slip on and may be worn comfortably during an entire trip. Its fluorescent red color makes it easier to see from the air than the previous standard chrome yellow or orange.

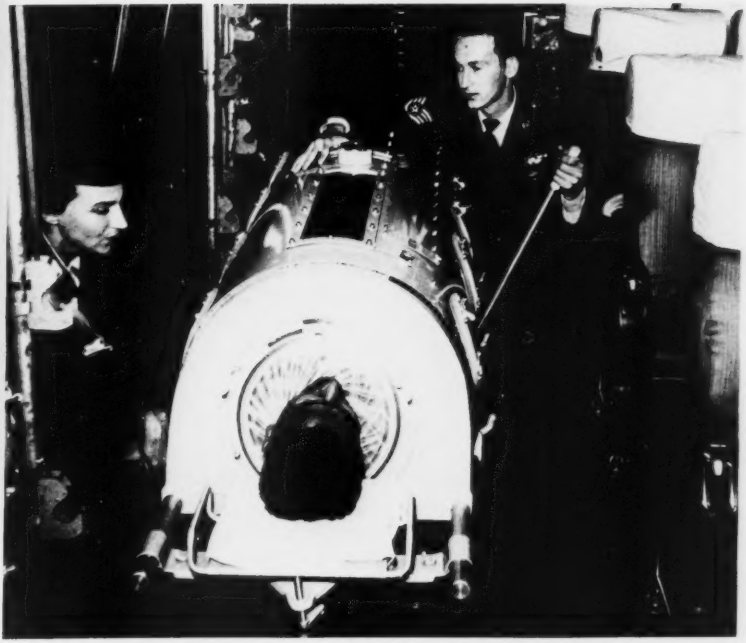

Figure 4. Portable, full-body, half-tank respirator containing patient and attended by a flight nurse and medical corpsman. Hand-operated bellows demonstrated by corpsman.

For air-terminal ground-operations a multiple-litter ambulance has been developed, being a modified commercial passenger bus fitted with the airplane-type litter assemblies. A capacity of 16 litters thus greatly reduces the number of field-type ambulances required at air terminals. This bus-ambulance with "walk in" rear doors speeds loading and unloading, requires few attendants, and provides a more comfortable ride than the field-type ambulance. Easily removable airplane-type seats impart flexibility of loading arrangements because they allow the vehicle to be used as an ambulatory-patient carrier and/or quickly converted to litter-patient transportation as required.

Standard walk-up ramps, now being service-tested, eliminate the use of stairs and forklifts and adjust easily to airplane loading doors of differing heights. This device speeds loading and provides smoother handling of litter patients. Research continues into other types of patient-loading apparatus, including a lift which is carried in the aircraft and operated by a hand winch. This lift, still experimental, is somewhat awkward but could be used in an emergency when no other equipment is immediately available.

There is also a forced-air cooler to augment aircraft air-conditioning systems during stops for patient loading in tropical climates. Combining these innovations in reliable aircraft with the services of well-trained experienced flight nurses and medical corpsmen, a load of patients can be successfully transported from Tokyo to Washington in less than 96 hours. This is routine, now, a dozen times a month.

SUMMARY

Aeromedical evacuation merits understanding on the part of participating physicians, now that the sciences of medicine and aviation have united to produce both efficient carriers and workable technics. Preventive medicine practices minimize the danger of spreading communicable disease by air evacuation. Flight surgeons are able to participate in the design of MATS transport planes. Study and experience have produced a substantial list of desirable characteristics and equipment for patient-carrying aircraft which are included in present air evacuation planes and programed for future designs. A bus-ambulance and a proposed standard loading ramp improve ground handling of patients. The new portable respirator, accompanied by a highly specialized medical team, assures the safe, world-wide transfer of poliomyelitis patients. Organizational progress guarantees close integration of patient movement control centers, medical teams, air crews, aircraft, and ultimately of the entire evacuation activity. The benefit to the individual patient as illustrated by the many military evacuees enhances and promotes the broader Army, Navy, and Air Force programs of military medical care. Finally, experience has proved that a patient who can be moved by any means can be safely and quickly transported by air.

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PSYCHOTICS WHO COMMIT OFFENSES PUNISHABLE BY COURT-MARTIAL

Recommendations for Their Early Diagnosis and Treatment

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EARLY diagnosis and treatment of psychosis is of great importance regardless of the circumstances. It is a universal finding that the sooner intensive treatment can be established, the more favorable the therapeutic results. Early diagnosis becomes of even greater importance if failure to establish the diagnosis submits the patient to prolonged and severe psychologic trauma which may make successful treatment impossible and give the illness a chronic character.

Such a situation exists when a psychotic member of the Army commits an offense punishable by court-martial, and diagnosis has not been established. If the diagnosis of psychosis is not made at the time of or shortly after the offense, the individual is subjected to the psychologic trauma of confinement, court-martial, and sentence. The sentence may include further stockade or disciplinary barracks confinement, fines, and dishonorable discharge. A perhaps even greater trauma is the attitude of society toward the individual who has committed an offense and is considered responsible for his actions. Delays involved in court-martial procedure can at times be prolonged, and this may greatly add to the potential of the psychosis for becoming chronic.

Each year this hospital receives many psychotic patients on prisoner status. As officer in charge of the psychotic prisoner patients, I have had the opportunity to observe and evaluate many patients who would have benefited from earlier diagnosis of their psychosis, had this been possible. This article deals with findings on five patients who had undergone general courts-martial, that demonstrate in the extreme the need for early diagnosis. Recommendations are made which, it is believed, will be of value in establishing early diagnosis in similar cases. The five patients selected had the following in common:

1. All had received general courts-martial, were found guilty, and had begun serving the confinement portion of their sentence.

From Valley Forge Army Hospital, Phoenixville, Pa. Dr. Nelson is now at Harvard University, Dept. of Hygiene, 15 Holyoke St., Cambridge, Mass.

2. All were referred to this hospital when psychiatric observation following court-martial revealed the presence of a schizophrenic reaction.

3. All were presented to a Board of Medical Officers at this hospital, which determined that each one had been psychotic at the time of offense and court-martial.

4. Medical Board recommendations that unexpired portions of sentences be remitted and dishonorable discharges be revoked were approved and carried out by the Department of the Army.

5. All failed to respond to treatment at this hospital, were considered to have chronic schizophrenic psychoses, and were discharged to civilian mental institutions for continued treatment.

The following case histories summarize the clinical data of each of the five patients.

CASE REPORTS

Case 1.

Past history. The patient was a 21-year-old single white man. His father, aged 53, worked for the Fire Department and later for the Post Office. The mother, aged 45, worked solely as a housewife. Both parents were described as being very strict. This was more marked in the father, who was extremely interested in military history and was a rigid disciplinarian with all the children. The patient was the oldest of five siblings. He was reared in a large city, attended public school, and quit at the age of 16 when he was in the 10th grade. He then joined a drum and bugle corps and prior to entering service became increasingly interested in historical military figures. He always had a limited social life and avoided relating himself closely to anyone. There were no serious past illnesses.

Present illness. From early adolescence the patient was withdrawn and unable to have a trusting, warm relationship with others, including his immediate family. He entered the Army at the age of 17. After completing basic training he received demolition training and was then sent overseas. Shortly thereafter he became increasingly preoccupied with military concepts and was extremely impressed by efficient military regimes of the past. He became critical of the American Army and frequently spent time on duty pretending he had no relationship to the Army. By the time he had been overseas one year he began to feel Army authorities were suspecting him of being a communist and were planning ways in which he could be trapped and sentenced to the stockade or prison. He believed papers referring to himself as a spy were purposely left about on the desks of important Army authorities.

After being overseas two years he was court-martialed for being found out of uniform while off duty and breaking a curfew regulation. While serving stockade sentence he gradually became concerned about

the possibility of having syphilis, despite the lack of any signs or symptoms of this disease. He requested that a blood test be made and, because of an exaggerated fear of the blood-taking process, asked that Amytal Sodium (brand of amobarbital sodium) be given him prior to the test procedure. This was refused and he was instructed to go ahead with the blood test without sedation. He refused this order and received a second court-martial with additional sentence.

While serving sentence the patient suddenly became excited, disrupted furniture in the stockade, and attempted to escape confinement. When questioned regarding this by the officer in charge of his confinement, he again disobeyed a direct order and was court-martialed with further increase in sentence time. While still in confinement overseas he made a suicidal attempt and was seen briefly in psychiatric consultation. He was transferred to a disciplinary barracks in the United States where initial evaluation revealed the presence of disturbed paranoid ideation. Arrangements then were made for his transfer to this hospital with a diagnosis of schizophrenic reaction, paranoid type.

At this hospital he continued with psychotic ideation, continually interpreting all hospital activities as part of an investigation to make further charges against him. Affect was inappropriate; he remained aloof from patients and personnel and made repeated investigations to locate dictaphones which he felt were continually recording his verbalizations. He failed to respond to treatment, which included a series of 16 electroconvulsive treatments. He was presented to a Board of Medical Officers, which agreed with the following diagnosis: Schizophrenic reaction, paranoid type, chronic, moderate; manifested by inappropriate affect, unrealistic behavior, and paranoid delusions.

Case 2.

Past history. The patient was a 23-year-old single white man. The father, aged 65, had steady employment as a construction worker. The mother was living and in good health. The patient was the sixth of 12 siblings. He was reared in a large city, attended public school, and quit school at age 16 while in the 10th grade. He was then employed for about one year as a shipping clerk. His present illness began after this period of employment. There were no serious past illnesses.

Present illness. At the age of 17 he stopped work and became extremely seclusive. Coincident with this was the onset of a large testicular varicocele. He was strongly urged to have this repaired but would not consent. He remained in his room with the shades drawn, refusing contact with all others except on rare occasions. He continually peered out the windows and implied others were looking at him, calling him names, intending him harm. He usually would eat only when food was taken to his room. Despite the severity of symptoms he was allowed to continue in this manner for several years. At age

19 he was finally persuaded to have a varicocelectomy, and following this he became even more withdrawn, seclusive, and suspicious. To the great surprise of the family he responded to a letter from a friend wondering why he had not been in service, and also responded to his draft call by going down for Army induction.

While in basic training he felt strange and apart from others. Outside the barracks he felt naked and as though others were watching him. He felt that they were attracted to his physique and mannerisms and at the same time repulsed. He completed basic training and was sent overseas. There his symptoms intensified, and he felt a strong drive to avoid the stares and implied accusations of those about him. Motivated by these feelings he cut his wrists. He told officials that it was not a suicide attempt but an attempt to avoid service. By saying this he felt his family would not know of his disturbed feelings. He was court-martialed and transferred to a disciplinary barracks in the United States, where initial psychiatric evaluation revealed withdrawal, suspiciousness, and sexual concerns. The diagnosis of schizophrenic reaction was made and he was transferred to this hospital.

Here he was withdrawn and hostile, and revealed paranoid ideation and grandiosity. He was only partially oriented, and misinterpreted the remarks and gestures of others on the ward; at times this led to hostile physical outbursts. He also continued with grandiose ideation, feeling himself capable of supreme accomplishment in the fields of education and entertainment. Affect was continually flattened and inappropriate. He failed to respond significantly to therapy. He was presented to a Board of Medical Officers, which agreed with the following diagnosis: Schizophrenic reaction, not elsewhere classified, chronic, severe; manifested by prolonged period of withdrawal from reality beginning at age 17, paranoid ideation, grandiose unrealistic self-conceptions, and suicidal attempts.

Case 3.

Past history. The patient was a 21-year-old single colored man. His father is believed to be dead, and the patient had no memory of him. He remembered the death and burial of his mother, but was unable to recall dates. His parents having died when he was quite young, the patient was placed in an orphanage, where he continued until several years before entering service. He was the second of four siblings, having two brothers and a sister, all believed to be in good health. He attended a school for retarded children and is not believed to have finished any school year. After leaving school he worked briefly at manual jobs, but had no steady employment and rarely engaged in productive activity. There were no serious past illnesses.

Present illness. As noted above, the patient failed to make a productive adjustment in school or work. For several years prior to entering service he drank to excess and engaged in disturbing homosexual activity. After completing basic training he was sent overseas. There

he was frequently referred to the company sergeant and commander because of excessive drinking and inability to perform his duties, at times being markedly confused. He received a general court-martial for disobeying direct orders. A psychiatric report 24 days following court-martial indicated a diagnosis of chronic schizophrenic reaction, hebephrenic type. The psychiatrist recommended immediate hospitalization. The patient was hospitalized, a diagnosis of antisocial personality was made, and he was returned to confinement duty where bizarre behavior continued. He was rehospitalized, and the diagnosis of chronic schizophrenic reaction, hebephrenic type, was again established. He was then transferred to this hospital.

The patient continued to be grossly psychotic in ideation and behavior. He was completely disoriented as to time, place, and person. He assumed bizarre postures and frequently responded to hallucinatory experiences. He required continual direction in regard to all of his personal needs. In relation to others on the ward he displayed inappropriate smiling and laughter. He failed to respond to therapy, including a series of 13 electroconvulsive treatments. He was presented to a Board of Medical Officers, which agreed with the following diagnosis: Schizophrenic reaction, hebephrenic type, chronic, severe; manifested by markedly inappropriate affect with excessive unprovoked smiling and laughter, disturbed and confused sexual ideation and behavior, disorientation, and hallucinatory experiences.

Case 4.

Past history. The patient was a 17-year-old single white man. His mother, aged 33, is believed to be in good health. The father was described as having been an alcoholic and at one time was confined in a state prison on a charge of nonsupport. When the patient was eight years old the parents were divorced and the mother subsequently remarried. The patient is the oldest of seven siblings. One sister is hospitalized with the diagnosis of schizophrenia. Following the divorce of his parents the patient was placed in boarding schools, foster homes, and orphanages for a period of seven years. The patient completed only seven grades of academic work and has never been consistently employed. There is no history of serious past illness.

Present illness. At the age of 15 the patient was hospitalized in a state hospital with a diagnosis of schizophrenic reaction, chronic, undifferentiated type. He continued under state psychiatric care, with three periods of hospitalization, during which he received intensive treatment that included subcoma insulin shock, psychotherapy, and occupational therapy. He was on conditional release from the state hospital at the time of his entering service at the age of 17.

Throughout basic training the patient was in frequent altercations with other enlisted men. During this period he was court-martialed for assault, but did not receive a sentence of confinement. At his next assignment he was court-martialed for disobeying a direct order,

sentenced to confinement, and transferred to a disciplinary barracks. There, on psychiatric evaluation, he was found to be psychotic, experiencing auditory hallucinations and showing inappropriate affect, and was considered a suicide risk. A Board of Medical Officers determined that the patient was not free from mental disease at the times of his offense and court-martial and was unable to distinguish right from wrong at the time of his offenses. He was transferred to this hospital with a diagnosis of schizophrenic reaction, not elsewhere classified, chronic; manifested by ideas of reference, auditory hallucinations, distortion of successful thinking, and depression.

At this hospital the patient continued to show signs of schizophrenic psychosis, including hallucinatory experiences, delusional ideation, preoccupation with symbolic thought, and withdrawal. He failed to respond to therapy, and was presented to a Board of Medical Officers, which agreed with the following diagnosis: Schizophrenic reaction, not elsewhere classified, chronic, severe; manifested by ideas of reference, auditory hallucinations, severe affect disturbance, and withdrawal.

Case 5.

Past history. The patient was a 24-year-old single white man. His parents were divorced when he was about four years old, and the mother remarried when he was seven. His father worked sporadically as a truck driver and is believed to have been argumentative and a heavy drinker. His mother, at the age of 60, still works as a sorter of rags, having worked throughout adult life to help support her children. The patient was the second of three siblings. At the time of the parents' divorce the patient was placed in a day nursery. The family financial situation had always been near poverty, and at times welfare agencies were needed. He began school at the age of six, continuing through the fifth grade. He then attended vocational school for one and a half years, stopping at the age of 14. Family financial needs necessitated his withdrawal from school, and he obtained work as a truck helper. He had always tended to be a quiet, socially withdrawn person who was unusually close to his mother. Throughout adolescence he had a stuttering speech defect and "ear trouble" at the age of 14.

Present illness. When he was 19 the patient had a brief relationship with a girl that was abruptly terminated by her. From that time he felt that others spread rumors to the effect that he was a homosexual. He became more withdrawn socially. He was inducted into the Army at the age of 21 and after entering basic training felt that those with him at camp were spreading rumors about his engaging in perverted sexual activities. He began a series of three AWOL's, motivated by his delusional ideation. While absent from his camp he would return home and remain in seclusion. He believed neighbors were also spreading rumors of a sexual nature. He finally received a general court-martial after assaulting a noncommissioned officer and escaping confinement. He was found guilty and transferred to a disciplinary barracks. There

he became acutely excited, destructive of property, and harmful to himself. When finally quieted from this episode, psychiatric evaluation revealed his paranoid delusional ideation, and he was transferred to this hospital.

Here his psychotic symptoms, including paranoid ideation, continued; he believed that others on the ward were spreading rumors of sexually perverted acts. He was continually suspicious of other patients and ward personnel and required observation because of assaultive outbursts. He failed to respond to therapy, including 17 electroconvulsive treatments, and was presented to a Board of Medical Officers, which agreed with the following diagnosis: Schizophrenic reaction, paranoid type, chronic, severe; manifested by delusions of persecution, ideas of reference, withdrawal, seclusiveness, and acute episodes of aggressive behavior.

DISCUSSION

Such pertinent data as was equally available on all five of the patients discussed is summarized in table 1 and reveals the following:

1. All were 24 years of age or younger.

2. Three came from homes with disturbed family relationships, having lost one or both parents before the age of eight. The other two showed a degree of family disturbance in that one had a rigid, strict father and the other's family failed to take appropriate action despite five years of gross psychosis.

3. All had psychiatric symptoms prior to entering service; three had had grossly psychotic symptoms, one had schizoid personality characteristics, and one showed a disturbed sexual adjustment, indulged in excessive drinking, and was unable to be productive in any sense.

4. All were privates and failed to adjust to Army life sufficiently to warrant promotion to higher grade.

5. All but one had had more than one court-martial. The exception had frequently been referred to his sergeant and company commander because of excessive drinking and inability to perform duties satisfactorily.

6. All had psychotic symptoms prior to court-martial.

7. Three received courts-martial overseas, after beginning their first overseas assignment. The two who received courts-martial in the United States committed their first offenses before completing basic training.

8. All committed offenses that are in some degree peculiar to the military setting, such as refusing medical diagnostic test, disobeying direct orders, and repeatedly going AWOL. In keeping with this, none had a history of a serious civilian offense.

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TABLE 1. *Summary of case histories of five psychotic general court-martial offenders*

	Case 1	Case 2	Case 3	Case 4	Case 5
Age when court-martialed	21	22	21	17	24
Rank	Private	Private	Private	Private	Private
Army status	Regular Army	Army of United States	Regular Army	Regular Army	Army of United States
Pertinent past history	Father was rigid disciplinarian absorbed in military history.	Family accepted five years of psychotic adjustment without referring patient to treatment.	Parents died when patient in early childhood. He was then with relatives and in orphanages.	Parents separated when patient age 8. Patient then in boarding school, orphanage, and foster homes.	Parents divorced when patient age 4. Spent time in nursery. Marked poverty at home.
Psychiatric symptoms prior to entering Army	Limited social relationships. Tended to be suspicious of others.	Psychotic behavior and ideation for five years.	Scholastic retardation. Disturbed homosexual adjustment and excessive drinking for at least a year.	Psychosis requiring hospitalization one year prior to service.	Paranoid ideation for three years.
History of serious civilian offense	None	None	None	None	None

TABLE 1. *Summary of case histories of five psychotic general court-martial offenders*—Continued

	Case 1	Case 2	Case 3	Case 4	Case 5
Total number of courts-martial	3	2	1	2	4
General court-martial offense	Refused blood test and further disobeyed direct order.	Cut wrist in suicidal attempt.	Disobeyed direct order.	Disobeyed direct order.	Assault of noncommissioned officer. Escape from confinement.
Where court-martialed	Overseas	Overseas	Overseas	U. S.	U. S.
Length of time of psychotic symptoms prior to court-martial	1 year	5 years	At least several months. Very disturbed adjustment for many years.	1 year, 5 months	4 years
Time from court-martial to intensive treatment	1 year, 9 months	6 months	6 months	5 months	1 year, 6 months
Diagnosis	Schizophrenic reaction, paranoid type	Schizophrenic reaction, n. e. c.	Schizophrenic reaction, hebephrenic type	Schizophrenic reaction, n. e. c.	Schizophrenic reaction, paranoid type

9. The time lapse between court-martial and the institution of intensive psychiatric treatment ranged from 5 to 21 months.

10. All were diagnosed as having schizophrenic reaction—two paranoid type, two not elsewhere classified, and one hebephrenic type.

RECOMMENDATIONS

A review of the data presented suggests the following recommendations, which may aid in early diagnosis and in reducing delay in instituting appropriate treatment.

Because all five patients had psychiatric symptoms prior to Army service and all had psychoses prior to committing a general court-martial offense, it is recommended that induction station and Army physicians be alert to such symptoms. The best time for diagnosis to be made and treatment instituted is during routine contacts with physicians, before disturbed acting out of symptoms. Any finding of a schizoid characteristic should be thoroughly evaluated, with referral to a mental hygiene clinic if indicated.

If diagnosis cannot be established earlier, the following circumstances at the time of offense warrant a complete psychiatric evaluation:

1. If there is evidence of disturbed adjustment prior to Army service.

2. If the offender has failed to make a satisfactory, productive Army adjustment. This may be indicated by previous courts-martial, demonstrating a need for rehabilitation.

3. If the court-martial offense occurs before the offender has completed basic training or during his first overseas assignment.

4. If the nature of the offense resembles a psychiatric symptom; for example, if the offense is a suicidal attempt or a refusal to carry out a direct order when associated with inability to perform other acts, or if the offense shows bizarre motivation.

When psychiatric evaluation is performed at the time of court-martial, it is recommended that it be thorough and complete. Patients able to hide psychiatric symptoms from laymen for several years may be able to conceal them from well-trained psychiatric personnel during the course of a "routine" interview. It is important that the evaluation never become "routine" in any sense. The characteristics of any schizophrenic reaction are always individual. When possible, hospitalization is recommended, to make possible prolonged, direct observation of relationships with others. Also of great importance in complete evaluation is the patient's past history. In the five cases cited, all had a history, both prior to and during Army service, which pointed toward the eventual diagnosis.

SUMMARY

Data on five cases of schizophrenic reaction showed that all had prolonged delays in diagnosis and treatment; all had undergone general courts-martial, had been found guilty, and had begun sentence; and all were found on subsequent evaluation to have been psychotic prior to and at the time of their offenses. Recommendations are made to aid in early diagnosis and timely institution of appropriate treatment.

INTER-AMERICAN MEDICAL CONVENTION TO BE HELD IN PANAMA CITY

The Second Inter-American Medical Convention will be held at the Hotel El Panama in Panama City, Republic of Panama, 3-5 April 1957, under the sponsorship of the Medical Society of the Isthmian Canal Zone, a chapter of the American Medical Association.

The scientific program will be wide in scope and on the order of a state medical convention in the United States. Speakers will be from North and South America, with all papers presented in both English and Spanish. Among those who will read scientific papers are Dr. William F. Rienhoff, Jr., on "Surgery in Carcinoma of the Lung," Dr. Hawley H. Seiler on "Surgery of Pulmonary Lesions Other Than Cancer," and Dr. William A. Sodeman on "Amebiasis." "Mass Casualty Management" will be discussed by a team of research workers from Walter Reed and Brooke Army Hospitals headed by Colonel Joseph R. Schaeffer, MC, USA.

In addition to the scientific papers, a full round of entertainment, including deep-sea fishing and trips into the interior of Panama, is planned for families who accompany the delegates.

For further information address: Doctor William T. Bailey, Chairman, Publicity Committee, Box "E," Balboa Heights, Canal Zone.

SOME NOTES ON THE HISTORICAL DEVELOPMENT OF THE MEDICAL SERVICE CORPS

MAJOR GENERAL JAMES P. COONEY, MC,
Deputy Surgeon General, U. S. Army

THE ORIGIN of the Medical Service Corps may be discovered in the days of the American Revolution and in the first organization of the parent corps of the Army Medical Service, the Army Medical Corps. In April 1777 the Congress, in a comprehensive law, provided the basis for over-all responsibility for medical service, and in addition to generalizing as to the accomplishment of this medical service, provided specifically for individual responsibilities, to include ". . . a Director General of all military hospitals . . . assistant deputy directors to superintend individual hospitals, an apothecary general for each district, a commissary of hospitals in each district, with assistants to provide rations and forage," and a hospital steward for each hundred patients. It requires little effort on our part to recognize duties and responsibilities which were to become standard responsibilities in our modern organization.

That administration was to be a bugbear and a source of discouragement and dismay to the physician was evident even at the early date. The same law required daily returns of sick and wounded to be made to the physician and surgeon general, and for monthly returns to be submitted to the Director General. I should hesitate to cite a more perfect reflection of current administrative practice.

Colonel P. M. Ashburn, in his invaluable source book, *A History of the Medical Department of the United States Army,* states in part: "It was a fine law, and gave the medical people a free hand, but it did not work satisfactorily. The reasons for this probably lay in the inexperience of the personnel in administrative work . . . ." There is no doubt that the addition of experienced administrative personnel would have eased the situation considerably.

Presented at walter Reed Annex, Forest Glen, Md., 25 October 1956.
Basic research for this article was done by Technical Liaison Office, Office of The Surgeon General, Department of the Army.

Although little in the way of specific knowledge has come down to us regarding the medical side of the War of 1812 and the Mexican War, scraps of information that have filtered down in one way or another, indicate with no reservation, that during both wars, physicians, in addition to their professional duties, were overburdened with additional work of a nonprofessional nature and were too often called upon to perform duties far afield from the practice of medicine. Listen to Surgeon General Thomas Lawson as he writes to the Adjutant General in the year 1840: "I have acted as quartermaster and as adjutant, and have been for months at a time in command of a company of men in the regular Army. I have also commanded a battalion and a regiment of men in the volunteer service, and have led them to a theater of war."

Nor did the situation change materially until the first year of the Civil War, when a Sanitary Commission was appointed, a commission that assumed wide powers and held sway in no menial fashion. Their investigations left them unhappy with the condition of hospitals, the lack of organized transport for the sick and wounded, and a general situation which they interpreted as one of stagnation. Their decision was to institute a reform and to name a new surgeon general.

They chose a young 34-year-old assistant surgeon, William H. Hammond, who had already served with the Army in the far west, gained recognition as a medical writer, and held the chair of anatomy and physiology at Maryland. Hammond rejoined the Army at the outbreak of war. This officer was to be a controversial figure throughout his Army career and even afterward, but there remains no doubt that he brought to his assignment unbounded energy, keen understanding and unusual foresight.

In his annual report for 1862, General Hammond recommended "the establishment of a permanent hospital and ambulance corps, composed of men specially enlisted for duty in the Medical Department, and properly officered, who shall be required to perform the duties of nurses in the hospitals, and to attend the services of the ambulances in the field."

General Hammond cleverly motivated his effort to obtain a hospital corps by pointing out that such a corps would allow several thousand detached men serving in hospitals to return to their own regiments. Still no enlisted corps was granted. But Hammond refused to be stymied easily. He anticipated the nonconcurrence of those to whom his appeal was directed, and asked for civilian nurses and cooks to live in the general hospitals. When this recommendation won approval, he organized a hospital corps for duty in general hospitals. He prescribed uniforms, physical qualifications, discipline, mode of payment, and in every way had himself

a quasi-military organization. These units were the forerunners of our hospital medical detachments of today.

Our next overt report as to the Hospital Corps came in 1887, in the annual report of Surgeon General John Moore, wherein it is noted that . . . "the law to organize the Hospital Corps having been signed by the President, transfers of men were being made from the line of the Army as rapidly as possible . . . ."

A year later, he again commented: "The organization of the Hospital Corps is nearly completed: 614 privates have been transferred to it from the line, 24 of whom were found qualified, after examination, for the position of acting hospital steward, and so detailed: 125 vacancies remain: 9 for civilian, 10 for privates, 81 for acting hospital stewards and 25 for hospital stewards."

Colonel Ashburn might well be quoted again on this subject, as follows: "This was an event truly great in the history of the Medical Department, but its greatness is not apt to be appreciated by the present generation of medical officers, whose whole service has been familiar with the work of the highly trained female Nurse Corps which has been part of the Army since the Spanish-American War . . . . But prior to that war and after 1888 there was only the Hospital Corps. It speedily developed a splendid corps spirit, took great interest in its work . . . developed many excellent technical assistants for operating room and laboratory, and enabled the medical officers to organize and conduct their hospitals in the (then) most modern manner . . . . In the hospital and in the field they rang true."

Little concrete writing is available today as to further exploits of the Hospital Corps. Surgeon General Sutherland mentions the blooding of the Corps in the last of the Indian Wars in his report of 1891. In the same year, Captain John Van R. Hoff, Assistant Surgeon, in reporting on the battle of Wounded Knee, noted: "I have heretofore had the honor to submit many reports and suggestions regarding the Hospital Corps under various conditions of service in post, camp and field, but it was only recently I had an opportunity to see its working under the crucial test of battle. It is but faint praise to say that it more than met my expectations."

The Hospital Corps continued as an entity of the Medical Department and performed its mission well. In the Spanish-American War, it expanded to almost seven times its size, performing creditably throughout the war. When it returned to its normal peacetime strength after the war, a period of optimism set in due to legislation allowing an increase of 50 per cent in hospital stewards. This period lasted only about two years when further legislation eliminated this heartening situation. A new basis for Hospital Corps manpower was announced, and the "ancient and

honorable title of hospital steward," as Colonel Ashburn rightfully termed it, passed from Medical Department terminology. This marked the close of some one hundred and twenty-five years of ancestry in the evolution of the Medical Service Corps.

We now approach the more modern beginnings of your Corps, leaving "ancient" history and drawing near to those times which are not apart from the memory of living people. All that has transpired until this point conclusively demonstrates the need for an ancillary corps within the Medical Department.

In June 1916, anticipating the seemingly inevitable participation of our country in the European War, Congress gave the President authority "to increase temporarily the military establishment," thus providing the legal basis for an ancillary corps within the framework of the Medical Department.

It was evident, almost forty years ago, as it was to be evident in other similar circumstances, that the Medical Department, once embroiled in an extensive war, would face the problem of not having enough medical officers to provide proper professional care to the large numbers of casualties that might be expected. It was logically reasoned that if a group of officers could be obtained to perform the nonprofessional duties of the Medical Department, more physicians would be available to render necessary professional care to the sick and wounded.

General Gorgas, The Surgeon General, recommended the establishment of the Sanitary Corps, and when his recommendation was approved, this Corps became active within the Medical Department in the summer of 1917. The empowering legislation authorized the appointment of "citizens of the United States who are found under regulations established by the Secretary of War to possess special skill in sanitation, sanitary engineering, in bacteriology or other sciences related to sanitation and preventive medicine, or who possess other knowledge of special advantage to the Medical Department."

Obviously, the primary reason for establishing the Sanitary Corps was the crying need of the Medical Department for officers capable of relieving medical officers of administrative duties and certain other nonprofessional medical duties. Another reason existed. When World War I was forced upon us, there was no avenue of approach to a commission for our senior noncommissioned officers of the Medical Department, due to its singular construction. Other branches of the Army had no such restriction, and many senior noncoms were seeking and obtaining commissions in the Infantry, the Quartermaster Corps, the Adjutant General's Corps, and in other branches. Should sizable numbers of our senior noncommissioned officers apply for transfer to other branches to

obtain commissions, their skills would be lost at a time when most sorely needed—during the time of buildup, when highly trained cadremen would be most essential. Having the Sanitary Corps at hand eased this potentially dangerous situation considerably, and we were able to offer our most capable noncommissioned officers a chance to gain officer status within our own Department.

With the rapid influx of civilians with specialties and skills allied to medicine and highly qualified and trained enlisted men, the Sanitary Corps expanded overnight. These individuals served with distinction throughout the entire war in just about every imaginable position in which their presence could be used. No echelon of the Medical Department was without its share of Sanitary Corps officers, from post, camp, and station through division level and up to the Office of the Surgeon General itself, where Sanitary Corps officers were assigned to the Personnel, Administrative and Dental Divisions as well as to the Sanitary Division.

The Sanitary Corps was a healthy and long-lived organization, a worthy antecedent of your healthy Corps of today. Although it had never gained the status of a regular component of the Medical Department having been constituted for the emergency period of World War I, it managed to remain alive between the two World Wars in Reserve status. Reactivated in World War II, it flourished until its active members and its Reserve component were absorbed in 1947. When it passed from the scene it left behind a record of over thirty years of faithful and dedicated service to the Army and to the nation.

The scattering to the four winds of the officers of the Sanitary Corps in the confusion of the post-World War I demobilization served to pinpoint the continuing need for an ancillary corps within the Medical Department. Surgeon General Merritte W. Ireland, in 1920, recommended that such a corps be established, and asserted that it should be called the Medical Service Corps. This some 27 years before your present Corps was born! Speaking before a Senate Committee, General Ireland said in part: ". . . Then there is another provision that I would like to have considered by the committee and that is the establishment of a new corps in the Medical Department, and it can be done without expense and without increasing the number of officers, and I think probably with a little saving . . . . The proposition is that we shall have a Medical Service Corps, and that it shall be made up of men who have served at least five years as soldiers and at least three years shall have been in noncommissioned officer's grade. At the end of that time, after passing a prescribed examination, he can be commissioned in the Medical Service Corps . . . . They are going to do the work that we are now doing with highly trained

medical officers, and if . . . allowed, those highly trained medical officers can return to their professional work. This will be an advantage in many ways. It will give encouragement to the members of the Hospital Corps; it will give him a future, and we will get a much better class of men into the Hospital Corps because he sees a majority awaiting him if he can make good . . . ."

General Ireland's recommendation for a Regular Army and Reserve Corps of nonprofessional officers was in part adopted. His recommendation that a Medical Service Corps be established was not accepted, but legislation permitting the Medical Administrative Corps was passed in June 1920.

For those of you who do appreciate a "romantic" touch, I might add that General Ireland, in his first year as a member of the Medical Corps, served at Fort Riley, where he had charge of the first company of instruction of the Hospital Corps that was ever organized. The year was 1891. His direct superior officer was a Major John Van R. Hoff, whom I quoted a short time back. It seems to me most appropriate that General Ireland, whose first assignment concerned itself with your antecedent group, should act as spokesman—some thirty years later—in recommending a vitally needed ancillary corps within the Medical Department.

Members of this new Corps had need of their pioneer background. General reductions in the strength of the Army, as well as legislation which appeared to discriminate against them, whittled the size of the Corps nearly in half. Arbitrary limitation as to grade expectancy was a bitter pill to swallow. In common with their Medical Corps associates, members of the new Corps began to feel the burden of "additional duties."

General Ireland now came forward with still another recommendation. He proposed amendment of the National Defense Act to establish a Medical Auxiliary Corps to consist of some 140 officers, *in grades from second lieutenant to colonel.* His idea was to recommission Medical Administrative Corps officers in the new Medical Auxiliary Corps in corresponding grades. The arbitrary restriction as to highest grade would thus be removed, and officers could be promoted on the basis of length of service just as the members of the other corps of the Medical Department were promoted. While it was true that not too many officers on duty at the time the bill was proposed would profit greatly by its passage, it would provide a firm basis for future career personnel, spelling out as it did the appropriate use of such officers.

In his annual report of 1926, General Ireland referring to the limitation of income for Medical Administrative Corps officers states: "It has never been understood by this office how so unjust and discriminatory a measure as this crept into the bill during the

final days of its passage. It practically means that an officer of the Medical Administrative Corps of long service at present in the grade of first lieutenant and promoted to captain receives no increase of pay. It is proposed that hereafter they be promoted after stated periods of service on up to the grade of colonel. This seems to be of particular importance with reference to the younger men now being commissioned in the Medical Administrative Corps . . . . In years past many of the enlisted men of the Medical Department looking forward to a commissioned career have sought and qualified for a commission in the line. This bill, if enacted, will offer to these enlisted men of the Medical Department equal opportunity in their own department and become a big factor in building up the type of enlisted force the Medical Department is trying to develop and urgently needs."

General Ireland's proposed legislation was not enacted. The medical officers continued to be burdened with too much work of a nonprofessional nature. Until his retirement in 1930 General Ireland continued his running battle to increase the numbers of all corps of the Medical Department without success.

In a letter accompanying his last annual report, General Ireland paid tribute to the Medical Administrative Corps, praising its usefulness and its over-all operation. Throughout his tenure as Surgeon General, he was forever in the forefront of those who tried to help the Medical Administrative Corps and its officers. He did everything that was humanly possible to dissolve the inequities under which the corps labored at that time. Even though little in the way of expanded career incentives was obtained during his stewardship, his willingness to champion the Medical Administrative Corps and its officers, and the yeoman efforts he put forth in their behalf, lifted their morale as nothing else could have done. With the retirement of General Ireland, one of the greatest champions the Medical Administrative Corps ever had passed from the active scene.

In 1935 a bill to authorize a Medical Auxiliary Corps was again introduced into the House of Representatives. This history and background of this particular bill is somewhat shrouded in mystery; practically all we know about it is that it was introduced by a Representative McSwain. It was analogous to the bill that General Ireland had proposed some time earlier, differing in proposing percentagewise limitations in the various grades, and also in providing for pharmacists and members of other professions allied to medicine to be commissioned in the proposed corps. This bill died in committee.

Both the Regular Army and the Reserve Medical Administrative Corps continued to decrease in size until 1941, when numerous

reserve and National Guard officers were called up for the duration of the emergency. Planning in preparation for possible global war led to the opening of officer candidate schools for Medical Administrative Corps applicants, first at Carlisle Barracks and later at Camp Barkley. I will wager that a goodly percentage of those of you who are listening to me tonight gained your commissions at one or another of these schools, whose graduates were to see service in every corner of the globe.

The Pharmacy Corps, in one sense, could trace its past to a point in time preceding even that of the Sanitary Corps, inasmuch as legislation concerning the utilization of pharmacists in the Medical Department had been proposed in Congress before 1917. Initially opposed to some features of the bill, General Ireland with the passage of a few years became amenable to the inclusion of a "certain number of pharmacists in the Army." They would have fitted very well into his proposed Medical Service Corps of 1920.

Legislation to commission pharmacists in the Medical Department was introduced into Congress in 1935 and passed in June 1936. The National Defense Act of 1920 was amended to allow a maximum of 16 pharmacists commissioned status in the Medical Administrative Corps. The stringency of this act was not recognized immediately, but if it were to be followed, it would preclude appointments other than of registered pharmacists in the Medical Administrative Corps in the future, and would ultimately have reduced the Corps from its authorized total of 72 officers to a total of only 16 officers.

Surgeon General Reynolds, commenting on this legislation in 1936, had this to say: "It is not as drug clerks, primarily or exclusively, that we contemplate the services of these officers, but more with the meaning 'pharmacy' as it is termed in the armies of Continental Europe, where the 'pharmacist' is a highly trained and educated officer who is concerned with practical sanitation, the procurement and development of military medical supplies and equipment, and the technical service in the chemical, bacteriological, serological, and x-ray laboratories."

In 1942 a bill to establish a Pharmacy Corps was introduced by Congressman Carl T. Durham, of North Carolina; in May 1943, it was approved with minor modifications. The President signed it into law in July 1943, and the Regular Army component of the Medical Administrative Corps passed into history after an active life of some twenty-three years. The Reserve component of the Medical Administrative Corps kept its name temporarily. The Pharmacy Corps was absorbed into the Medical Service Corps when that branch came into being in August 1947.

The performance of the Medical Administrative Corps and its officers in World War II has been sufficiently chronicled; it is too well-known to require further treatment at this time. Your Corps and its individual officers faced and met responsibility with confidence and efficiency and, by the time hostilities were over, they were performing creditably almost every type of duty, except the actual practice of medicine, dentistry and nursing within the purview of the Medical Department.

General Norman Kirk, sensing the unwieldiness of the administrative groupings within the Medical Department after World War II, recommended the establishment of a single corps which would incorporate the skills and administrative and technical knowledge found in the Sanitary Corps, the Medical Administrative Corps, and the Pharmacy Corps. He recommended that it assume the name and be patterned after the corps originally proposed by General Ireland in 1920.

The initial period of regrouping, the overwhelming administrative difficulties which arose and the host of problems allied to your reorganization were met in characteristic fashion by Colonel Goriup, your first chief, and his able assistants. Colonel Goriup and his successor, Colonel Black, did yeoman work in their terms as Chiefs of the Corps. I wish that I had more time to delve into the background of some of the problems these officers coped with and the tremendous effort expended in their solution. I believe we are too near to their work to see it in its true perspective.

I do not wish to seem blunt or brief in speaking of the Korean campaign. The manner of performance of duty of our Medical Service Corps officers is here again too recent to need analysis or comment. I see here tonight many officers whose service in Korea was service of high distinction. In such circumstances, it is not proper to discuss history with men who helped in their own way to make that history.

After this short wandering tour through some of the highlights of the history of your Corps, we reach the present. And what about this Medical Service Corps of today? Or of tomorrow?

Your Corps is headed up by another dynamic officer, Colonel Bernard Aabel, who reflects the high purpose and ability to get things done that characterized the two Chiefs who preceded him. Your senior officers are bastions of strength. On every hand we have junior officers whose performance of duty is superior. One of the nicest things about our present crop of Medical Service Corps officers is that none of them are just "going along for the ride." The Medical Service Corps of today is composed of individuals who are dedicated to the highest principles of the Army Medical Service, the United States Army and this great nation of ours.

But what about tomorrow?

Much as I wish it were otherwise, I have no crystal ball, and I am not able to define the kind of Medical Service Corps that tomorrow will bring to, or require of, the Army Medical Service. I do know that it will continue to offer fruitful careers to qualified men whose interests in life include work in paramedical fields and service to their country; that much will remain unchanged.

Within the past year or so new career incentives and new career opportunities have become available to you. I refer to the careers that have opened for you in such fields as medical intelligence, military missions and particularly in the Logistics Officer Program. In encompassing the whole area of service support, this latter program alone is breath-taking in its possibilities. These are optimum times for the advancement of your Army careers. A newer and broader vista of opportunity and promise will open to you in the rich future that beckons to the Medical Service Corps.

Your Corps stands in the unique position of being old enough to have its own traditions, yet young enough to be impressionable. You can gain acuity from the reservoir of your past experience that will help you to look forward with the keen vision that tomorrow's problems will demand. If, as the historians say, the Past is Prologue, your past record tells me that your officers will write still finer chapters in your history.

One thought must give us pause in attempting to preview your future. I believe you must heed the injunction made by Secretary of the Army Wilber M. Brucker recently. Secretary Brucker said: "We derive great inspiration from the magnificent achievements of yesterday, but unless we translate that inspiration into equally splendid accomplishments today, the American way of life cannot long survive." This challenge will remain constantly with you as you move forward.

CASE REPORTS

Oral Surgery Complications Caused by Flight

LUCIAN SZMYD, *Major, USAF (DC)*

THE extraction of posterior maxillary teeth often necessitates the removal of considerable alveolar bone. Large areas of antral membrane thus may be deprived of bony support. The purpose of this article is to discuss some of the physical factors encountered during flight which may affect the postoperative course of such cases. The case reported here demonstrates the effect of changes in atmospheric pressure, created during flight, on the Schneiderian membrane of an abnormal sinus following the surgical extraction of maxillary posterior teeth.

When the maxillary sinus is subjected to variations in barometric pressure during flight, equilibrium between the pressure within the cavity and atmospheric pressure is established at a rate that depends upon the size of the ostium and the extent of change in barometric pressure.[1] The extent of change in atmospheric pressure depends upon the altitude and the rate of vertical ascent or descent.[2] When the maxillary sinus is normal and the ostium is patent, differences in pressure between the air within the sinus cavity and the surrounding atmosphere are brought into equilibrium quickly and uneventfully.[3] Obstruction of the ostium by redundant or hypertrophied tissue, anatomic deformities, polyps, mucus, or purulent exudate may delay or prevent equilization of pressure[4] (fig. 1).

Varying atmospheric pressure changes are created by flight. Operational aircraft fly at altitudes over 40,000 feet and are capable of vertical ascent at rates of 100 feet per second and dive at speeds of 1,000 feet per second. Operational aircraft flying at altitudes exceeding 40,000 feet maintain their cabin pressure at approximately 16,000 to 20,000 feet. Conventional transport aircraft fly at altitudes of 6,000 to 10,000 feet and ascend and descend at rates approximating 10 feet per second. Commercial transport aircraft flying at altitudes exceeding 10,000 feet maintain their cabin pressure at approximately 6,000 to 10,000 feet.[5]

Whenever the antral membrane is exposed or perforated in an oral surgical procedure, the patient is always cautioned against

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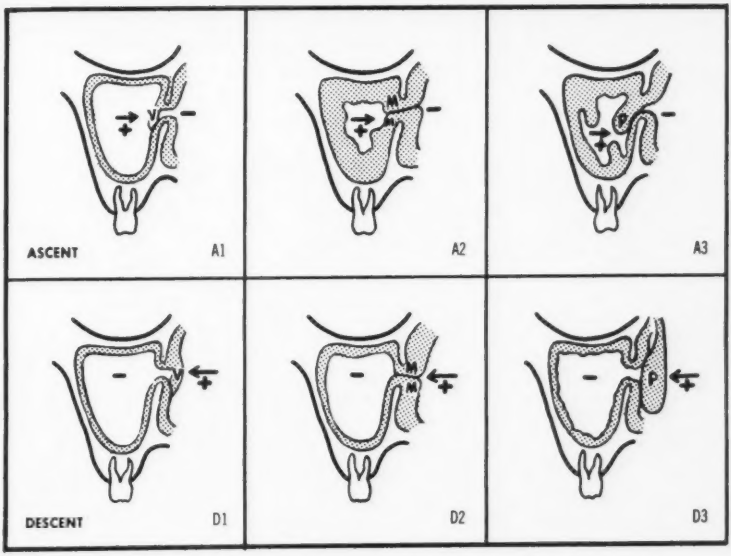

Figure 1. (A) During ascent any valvular formation within the sinus cavity will prevent the exit of air from the sinus as the atmospheric pressure decreases. (D) During descent and increase of atmospheric pressure similar formations on the nasal side of the ostium will prevent the entrance of air into the sinus.

A. Ascent
A1. V—Developmental flap-valve formation of sinus mucous membrane.
A2. M—Swelling of the mucosa of sinus with flutter-valve effect.
A3. P—Mucosal polypus in sinus constituting a ball valve.
D. Descent
D1. V—Developmental flap-valve formation of nasal mucosa.
D2. M—Swelling of nasal mucous membrane with flutter-valve effect.
D3. P—Polypus presenting in nasal fossa and acting as a ball valve.

(Reproduced from *Contributions to Aviation Otolaryngology*, by E. D. D. Dickson, Headley Brothers, London, 1947.)

sneezing or blowing of the nose because these acts affect the pressure in the maxillary sinus. This can readily be demonstrated by blowing the nose in the presence of a small perforation of the antral membrane. Air bubbles will be emitted from the perforation site due to the increase in pressure of the gases in the antrum.

The following case illustrates that when the Schneiderian membrane of an abnormal sinus is exposed or perforated following a surgical procedure, the patient should be cautioned not only against sneezing and blowing of the nose, but also against air travel.

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CASE REPORT

A 23-year-old airman was referred by the ear, nose, and throat department to the oral surgery service with a large oroantral fistula. Six weeks prior to admission, the right maxillary first and second molars were extracted. The patient stated that considerable alveolar bone had been removed in order to perform the extractions and that he was cautioned against blowing his nose or sneezing afterward. Healing was uneventful until the patient took an airplane flight one week after the operation. After landing, the patient noted a large mass protruding into his mouth at the extraction site (fig. 2). A diagnosis of a herniated antral membrane was made and the tissue was excised. The patient was then referred to the oral surgery service for treatment.

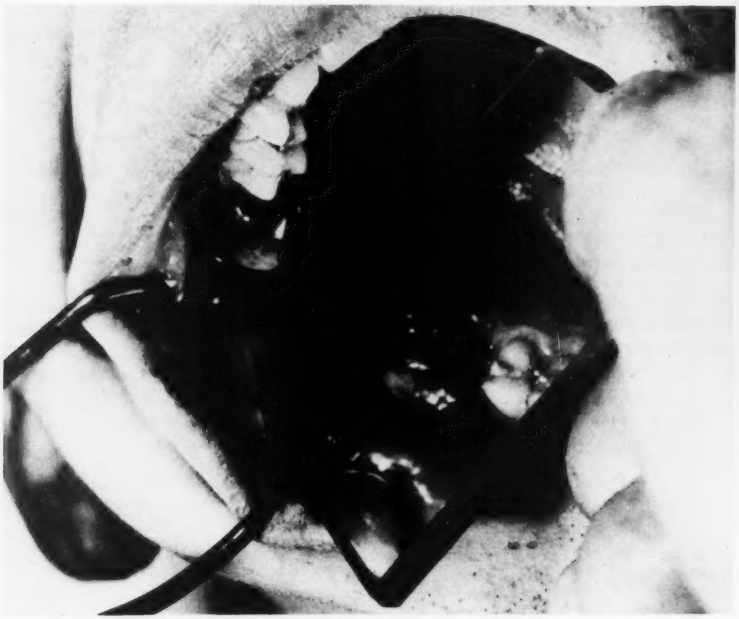

Figure 2. Photograph showing the herniated antral membrane in the right molar area following flight. (Mirror image shows the palatal view.)

Clinical examination revealed an oroantral opening 1 cm in diameter in the area of previous extractions (fig. 3). A probe passed readily through the opening into the right maxillary sinus. A large polyp was obstructing the opening, but no evidence of drainage from the maxillary sinus was noted. No lymphadenopathy or asymmetry of the face were seen on admission. Roentgenographic examination revealed a generalized opacity of the right antrum (fig. 4A).

From clinical and roentgenographic evidence it appeared that three conditions had existed prior to air travel: (1) infection of the maxillary sinus, (2) lack of bony support for the antral membrane in the area of the herniation, and (3) a defect in the integrity of the oral mucous membrane in the area of the herniation.

Figure 3. Photograph showing the oroantral fistula.

Using general anesthesia an orthodox Caldwell-Luc approach was used to enter the right maxillary sinus. After the removal of polyps and purulent exudate, a nasoantral window was made. The antrum was then packed with iodoform vaseline gauze. The end of the pack was passed into the nasal cavity, and the original incision was closed without drainage. After de-epithelization of the fistulous tract, a subperiosteal palatal flap containing the anterior palatine artery was provided to close the oroantral fistula (fig. 5). A surgical acrylic splint, which had been constructed prior to surgery, was adjusted and inserted.

The postoperative course was uneventful. The denuded area on the palate was completely epithelized and a satisfactory closure of the oroantral fistula was obtained (fig. 6). Roentgenographic examination, four months postoperatively, revealed that the right antrum had cleared (fig. 4B).

Figure 4. (A) Waters view taken preoperatively showing the cloudy right antrum. (B) Waters view taken four months postoperatively, showing clearing of right antrum.

Figure 5. Photograph taken two weeks postoperatively showing the flap over the right maxillary molar area and the denuded area on the palate.

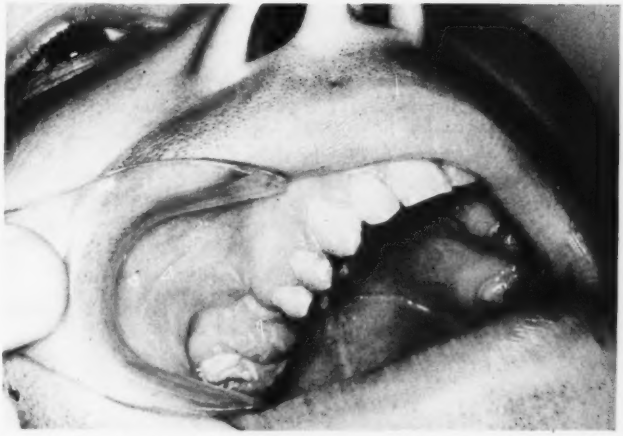

Figure 6. Photograph taken four months postoperatively, showing the successful plastic closure of the oroantral fistula.

Figure 4. (A) Waters view taken preoperatively showing the cloudy right antrum. (B) Waters view taken four months postoperatively, showing clearing of right antrum.

SUMMARY AND CONCLUSIONS

Changes in atmospheric pressure created during flight may produce undue stress on the antral membrane of an abnormal sinus when it is devoid of bony support.

The oral surgeon must be aware of the physical factors encountered during flight which may adversely affect the postoperative course in patients from whom considerable alveolar bone is removed during the extraction of posterior maxillary teeth. In cases where alveolar bone is lost in the vicinity of the antrum, the oral surgeon should obtain roentgenograms to evaluate the sinus. Whenever infection or other abnormalities are noted, treatment should be recommended and the patient advised against air travel.

The wisdom of this course is illustrated by a case report which describes the herniation of an antral membrane at the site of a defect in the alveolar bone produced during dental extractions. Infection of the maxillary sinus existed prior to the herniation. If the patient had been warned to avoid air travel the herniation probably would not have occurred.

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"At any stage in the course of scleroderma uraemia may ensue and the patient die in a few weeks or less. . . . This complication of scleroderma is characterised by rapid destruction of renal tissue due to an acute or subacute version of focal and minor renal cortical necrosis."

—R. J. CALVERT, M. D., and T. K. OWEN, M. B.
in *The Lancet*
p. 19, 7 July 1956

Priapism of Unknown Cause

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BENJAMIN E. SCHWARCZ, *M. D.*

PRIAPISM is an uncommon and extremely distressing condition which has not been adequately dealt with in the textbooks. It is usually defined as a state of sustained, painful erection without sexual desire. Priapism may be due to a variety of causes which can be grouped into two general categories—nervous and vascular.

It has long been observed that men hanged by the neck develop priapism. This condition has also been seen in injuries of the cervical cord and, as a rare manifestation, of central nervous system disease such as syphilis and multiple sclerosis. In priapism associated with central nervous system disease, the patients have usually developed associated urinary retention due to interference with the nervous mechanism controlling micturition. Priapism due to vascular causes constitutes by far the largest group of cases. Erection is maintained by thrombosis of the venous channels of the penis.

Thrombosis may result from sickle-cell anemia, leukemia, carcinomatous infiltration of the corpora cavernosa, and as a result of trauma to the perineum. Priapism in the younger age group is usually the result of leukemia or sickle-cell anemia, while in the older age group it is more apt to be due to carcinoma.

The two following cases are unusual because of the absence of an etiologic factor and the prolonged duration of priapism.

CASE REPORTS

Case 1. A 40-year-old Negro was admitted to this hospital on 22 August 1951, six days after awakening with an erect penis which had failed to subside. He gave a past history of syphilis, which had been treated with arsenicals in 1942. On admission to the hospital, his penis was erect and tender, but he was able to void without difficulty. Examination revealed no significant abnormalities, except for the priapism. Both the corpora cavernosa and the corpus spongiosum were involved. Laboratory studies disclosed no evidence of sickle-cell anemia. The patient had a quantitative Kahn of 8 units, and spinal fluid complement fixation was 3 plus. An intravenous pyelogram and a roentgenogram of

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the chest were normal. A roentgenogram of the spine showed hypertrophic arthritis.

The patient was placed on heparin therapy, ice bags were applied to the penis, and two lumbar sympathetic blocks were done without benefit. On the 19th hospital day, which was 25 days after the onset of priapism, the corpora cavernosa were aspirated with a No. 15-gage needle and then irrigated thoroughly with normal saline solution. Prompt improvement occurred and the priapism subsided within 24 hours. Five days later, the patient was discharged, at which time the penis had returned to its normal state and he was again having morning semierections.

Case 2. A 23-year-old white male was admitted to this hospital on 19 December 1953, because of priapism of three days' duration. He had had a similar episode two years previously, lasting only 8 hours. On admission, he was able to urinate and had no dysuria, but his penis was painful. A review of his past history contained nothing pertinent to the present illness. Positive physical findings were limited to the penis, which was erect and painful to touch. Both the corpora cavernosa and the corpus spongiosum were involved in the erection. Laboratory studies, including a complete blood cell count; urinalysis; prothrombin and bleeding times; and spinal fluid protein, sugar, and colloidal gold were within normal limits. The Kahn test and spinal fluid were negative for syphilis. Roentgenograms of the spine and chest revealed normal findings.

The patient was first treated with heparin and Dicumarol (brand of bishydroxycoumarin) in an attempt to prevent further thrombosis. He was also placed on diethylstilbestrol, and an ice bag was applied to his penis. This was of no avail, and his condition became progressively worse with more pain and tenderness. On the third hospital day, he was given a spinal anesthetic, and when this failed to relieve his priapism, the corpora cavernosa were evacuated through a No. 16-gage needle and irrigated with normal saline solution. Following this procedure, priapism gradually subsided and was completely gone by the seventh postoperative day. Three weeks after aspiration, the patient was again having semierections in the morning. A follow-up in April 1956, disclosed that he was still having semierections and was able to have sexual intercourse. He had had no further episodes of priapism and had not noticed any deformity of his penis as a result of aspiration, except for the incompleteness of his erections.

DISCUSSION

In the two cases presented, the cause of the priapism was not apparent. In the case of the 40-year-old Negro patient, there was a previous history of syphilis, but neurologic examination did not reveal any evidence of central nervous system involvement, although the complement fixation test on the spinal fluid was positive. Most of the reported cases of priapism have been found to be secondary to other disease processes. The treatment of

priapism is far from satisfactory. In cases such as the above, where there is no apparent underlying lesion, it seems likely that the priapism begins as a neurogenic problem. Hyperactivity of the parasympathetic system may account for the development of the erection initially and for sustaining it for an unusual period of time. If this were the only factor, however, spinal anesthesia would be expected to produce prompt remission of the condition. This has not been the case. Thrombosis of the venous channels of the penis following prolonged erection occurs fairly early and probably prevents alleviation by spinal anesthesia. Ansbro and associates[1] reported a case of priapism in a patient who received spinal anesthesia continuously for a 14-day period without relief of erection. Most, if not all, cases of priapism have reached the stage of venous thrombosis before they are seen by the physician. The problem is, therefore, one of treating venous thrombosis rather than parasympathetic hyperactivity.

In 1950, Smith[2] reported the first case of priapism successfully treated by Dicumarol, and in 1955 Fraser[3] reported the second case successfully treated with this drug. This appears to be a rational approach to the disease and probably has its greatest application in the early stages of priapism.

Both heparin and Dicumarol were used in our two patients without apparent benefit. Price and Penna[4] reviewed a large series of cases in which they used diethylstilbesterol in preventing postoperative penile erections. Although it is effective in this situation, it appears to exert no beneficial effect in true priapism.

Various other methods of treating priapism have been advocated, such as division of the pudendal nerves, division of the ischiocavernosus muscle, and ligation of the dorsal artery of the penis. They are mentioned only to be condemned and are in general mutilating procedures. Sympathetic block would appear to be the incorrect thing to do, because it would further release the sacral parasympathetic outflow whose action is responsible for erection under normal circumstances.

Evacuation of the corpora cavernosa, either by aspiration or incision and drainage, has been demonstrated to be one of the most effective forms of treatment and has been practiced for over a century. This form of treatment is most efficacious in the early stages of the disease, but in the two cases presented proved beneficial on the 25th and on the 6th day of the disease.

The corpora cavernosa should be thoroughly irrigated with normal saline solution at the time of aspiration to remove clotted blood. A No. 15- or No. 16-gage needle works satisfactorily for this purpose.

Although gangrene is not an infrequent complication of aspiration or incision, according to Bailey,[5] no difficulty was encoun-

tered in the patients seen by the authors. Impotence is a common sequela of priapism. In the one patient who was followed to the present time, intercourse was possible, although the penis would become only semierect. The other patient was having morning erections when he left the hospital, but has been lost to follow-up study so his ultimate fate is unknown.

SUMMARY

Priapism, an uncommon condition, may be caused by central nervous system disorders such as injuries of the cervical cord, syphilis, and multiple sclerosis; it also may develop during such vascular disorders as sickle-cell anemia, leukemia, and carcinomatous infiltration of the corpora cavernosa.

The pathogenesis of priapism of unknown cause probably includes initially hyperactivity of the parasympathetic nervous system in most instances. Thrombosis of the venous channels of the penis then maintains the erection and prevents alleviation of the condition by spinal anesthesia.

Evacuation of the corpora cavernosa, either by aspiration or incision and drainage, is one of the most effective forms of treatment, but is frequently followed by impotence. Anticoagulant therapy is helpful in the early stages of this condition.

The two instances of priapism reported in this article occurred in patients who had no apparent causative disease. The condition was relieved by anticoagulant therapy plus aspiration and irrigation of the corpora cavernosa.

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Spontaneous Rupture of the Stomach in Infants

MARCUS W. MOORE, Sr., *Captain, USAF (MC)*

SPONTANEOUS rupture of the stomach in the newborn infant is a rare condition. Herbut[1] summarized 15 cases with spontaneous ruptures from the English literature in 1943. In one case the perforation was proved not to be secondary to gastric ulceration. He reported an additional case with a congenital defect in the musculature of the stomach wall. Other case reports have been added to make a total of 33 cases recorded in the literature.[2-6] Thirteen of these are described as spontaneous rupture of the stomach not secondary to a gastric ulceration. Pendergrass and Booth[7] in 1946 reported an infant with two perforations of the stomach. In 1947 Burnett and Halpert[8] reported rupture of the stomach in an infant with pyloric atresia. Tudor[9] in 1950 described one case of spontaneous rupture in the greater curvature of the stomach. Eight other cases have been reported between 1951 and 1956.[10-12] This report is of an additional case of spontaneous rupture of the stomach in an infant without gastric ulceration.

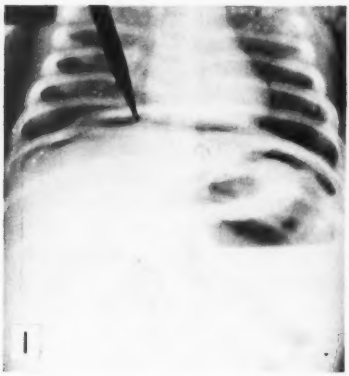
Although many theories have been proposed as to the cause of spontaneous rupture of the stomach in infants, the definite cause remains obscure. One author regarded the mechanism of the perforation as a local disturbance in circulation to the stomach wall by embolism, thrombosis, vascular disease, nervous influences, or direct injury to the mucous membrane, with subsequent perforation following the action of the gastric juice. Extensive investigative studies have also been performed to demonstrate an imbalance of pituitary hormones as the cause of the spontaneous gastric ruptures in infants.[12] Congenital defect of the musculature of the stomach wall has been described and considered responsible for the perforation.[1,7,8] Tudor and others have reported cases in which no defects in the muscular wall of the stomach could be demonstrated. One patient reported by Ross, Hill, and Haas[10] had a perforation of the stomach with necrosis of the wall, possibly due to intramural hemorrhage.

From U. S. Air Force Hospital, Travis Air Force Base, Calif.

CASE REPORT

A five-week-old white male infant was rushed in critical condition to the pediatric service of this hospital from a dispensary station of an Air Force base about 50 miles distant on 28 March 1956. Twelve hours prior to admission the infant became acutely ill and had abdominal distention, shallow respirations, and cyanosis. He was listless and had an ashen gray color. The infant had a history since birth of periodic episodes of illness characterized with vomiting, hematemesis, melena, poor feeding habits, and apparent abdominal pain. He was born after a normal gestation period and an uncomplicated delivery. His mother was a 23-year-old multipara in apparent good health, and he had two normal siblings. The infant had been seen at the dispensary station on four previous occasions.

Physical examination on admission revealed a cyanotic infant with a markedly distended abdomen and shallow respirations, appearing to be at the very point of death. He responded to immediate emergency therapy of parenteral fluids with electrolytes, antibiotics, hydrocortisone, whole blood, and oxygen. Preoperative fluids—approximately 200 ml of normal saline solution in 5 per cent dextrose solution, mixed with 60 ml of 1/6 per cent molar lactate containing 100 mg of hydrocortisone and 250 mg of Terramycin (brand of oxytetracycline)—were given intravenously through an emergency venisection and polyethylene tube cannulation of the left ankle. One hundred and fifty milliliters of whole blood was begun as transfusion preoperatively and continued through the surgical procedure. Immediate laboratory studies were made of the patient's blood and urine. Erect and lateral roentgenograms of the abdomen (figs. 1 and 2)



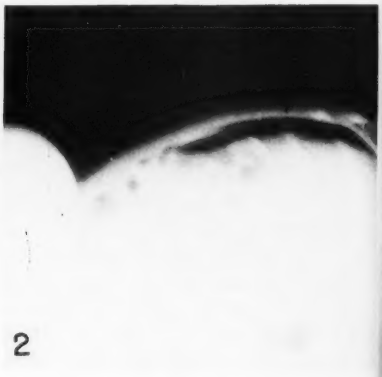


Figure 1. Roentgenogram of the abdomen taken in the erect position, demonstrating gas free in the peritoneal cavity under the diaphragm. Figure 2. Roentgenogram taken in the lateral recumbent position, demonstrating pneumoperitoneum.

demonstrated free gas under the diaphragm with a markedly distended gastro-intestinal tract. A diagnosis was immediately made of pneumoperitoneum from a ruptured hollow viscus.

An emergency exploratory laparotomy was performed. A massive amount of milky fluid mixed with gastric contents was found free in the peritoneal cavity. All the abdominal viscera were covered with a thick, clotted fibrinous exudate. There was a 4- by 2-cm rupture in the fundus of the stomach along the greater curvature. The edges of the rupture were irregular and frayed, and had a dark purple discoloration. The stomach was debrided, and the laceration was closed in two layers.

The infant's immediate response after operation was remarkably good. Therapy included continuous gastric suction, oxygen, and whole blood transfusions, plus administration of electrolytes and antibiotics. About 12 hours following operation he developed generalized tonic and clonic convulsions; his condition gradually became progressively worse, and he died on the first postoperative day.

An autopsy, performed several hours after death, revealed evidence of a massive peritonitis with all the abdominal viscera matted together by a thick, plastic exudate. The stomach was removed entirely, and the surgical repair (fig. 3) was found to be intact. There were no other ruptures or obstructing lesions in the alimentary canal. Microscopic

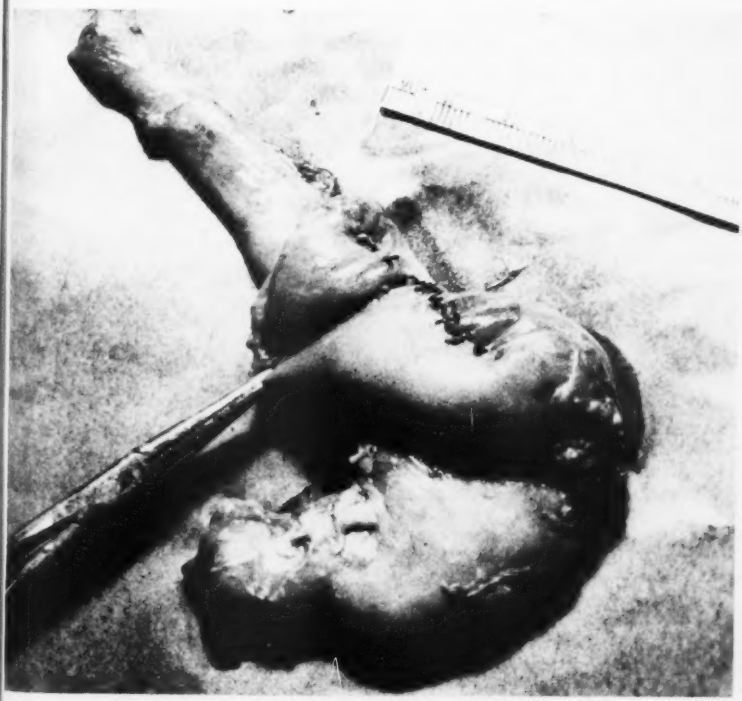


Figure 3. Photograph of the stomach after post-mortem removal. The suture line in the greater curvature demonstrates the extent of the rupture.

examination of the borders of the rupture demonstrated the mucosa to be hemorrhagic with a moderate amount of acute inflammatory infiltration into the submucosal areas. There was normal development of all layers of the gastric musculature.

Because the generalized peritonitis in this case was due to a rupture of the stomach with profuse spillage of gastric contents all over the peritoneal cavity, it was impossible to isolate any one organism as being responsible. It could be classified as a chemical peritonitis.

DISCUSSION

Although rupture of the stomach in infants is rare, prompt treatment can be lifesaving. The importance of making the diagnosis in an infant is considerably greater than in an adult, for if left untreated surgically, the infant practically always succumbs. Unfortunately, the majority of the cases are not recognized clinically in the early stages and usually are diagnosed only after perforation of the stomach or development of peritonitis. Seven of the 33 patients reported have survived operation.

SUMMARY

Thirty-three cases of spontaneous rupture of the stomach in newborn infants have been recorded in the literature. Thirteen infants have been described with ruptures of the stomach not secondary to gastric ulceration. Another case is herein reported of spontaneous rupture of the stomach in a five-week-old infant. There are seven surgical survivals reported in infants.

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Kartagener's Syndrome

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KARTAGENER'S syndrome or triad consists of situs inversus, bronchiectasis, and chronic sinusitis. To date, less than 100 cases have been reported in the literature, which indicates the rarity of this condition. The pathogenesis is unknown, but various theories have been proposed. Bergstrom and others[1] stated that the changes noted in the lungs may be a structural defect of the respiratory epithelium causing a predisposition to infection or an altered secreting activity of the bronchial mucous membrane. Olsen,[2] in reviewing the causes of bronchiectasis associated with dextrocardia, agreed that a maldevelopment of the bronchial walls may be the primary factor in the pathogenesis of the bronchiectasis.

At the Mayo Clinic during the period from 1920 to 1941, 85 patients had true dextrocardia with complete transposition of all viscera. Fourteen of these patients had bronchiectasis and 10 of the 14 had diseased sinuses. Adams and Churchill[3] found a 0.03 per cent incidence of this triad in a large hospital. It has been recommended by some authors[4] that all children with dextroposition of the heart and frequent upper respiratory tract infections should have studies to rule out bronchiectasis and sinus infection so that they may be treated early before marked damage has occurred. Katz and others[5] recommended that the families of such patients be screened because there is a familial incidence of this disease. This is noted in the report by Bergstrom and others, in which 2 of 6 siblings had Kartagener's syndrome, 2 had bronchiectasis and sinusitis, and 2 were normal. Two of the five children observed by Dickey[6] were siblings, and all had atelectasis accompanying the usual triad.

The treatment is at present symptomatic and consists of postural drainage, antibiotics as needed, and routine care of sinusitis as required. Depending on the extent of bronchiectasis, lobectomy or segmental resection may at times be indicated.

CASE REPORT

A 17-year-old white woman was admitted to this hospital on 15 August 1955 with a chief complaint of a chronic cough which produced 2 to 3

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ounces of fetid yellowish-green sputum daily. The cough was more severe and productive on arising in the morning and subsided somewhat during the day. She had attacks of wheezing and dyspnea on hot, damp days. No history of hemoptysis could be obtained. These symptoms had been present intermittently over the past 12 years. From the ages of 10 to 15 years she had repeated attacks of pneumonia in one or the other of the lower lobes. Frontal headaches had occurred during this same period, with an increase in nasal discharge at times. No bloody nasal discharge had been present.

Menarche occurred at 13 years of age, and menses had been regular every 30 days, lasting five to six days. Her weight had been steady at 110 pounds. In 1954 the patient had an appendectomy, at which time the appendix was found to be on the left side. She had pyelonephritis shortly after her marriage in March 1954 and again in August 1955, two weeks prior to admission. The history was otherwise negative except for the common childhood diseases and a chronic blepharitis.

Her mother was living and well; her father had died at the age of 34 with "asthma and bilateral pneumonia." No history of dextrocardia in the father was known. Two brothers and one sister were living and well.

Physical Examination. On admission, the blood pressure was 105/60; pulse, 85 per minute; and temperature, 98.6°F. A mild blepharitis involved both eyes. The nasal mucous membrane was red and edematous, and it was noted that the upper nasal region was widened. The sinuses, especially the frontal, were visualized with difficulty. Ophthalmoscopic examination was within normal limits. Examination of the lungs revealed crepitant rales in both bases, anteriorly and posteriorly, which cleared on coughing.

The apex of the heart was found to be in the midclavicular line on the right side of the chest. No abnormalities of the abdomen were noted, except that on percussion the liver appeared to be on the left and the spleen on the right. Neither was palpable. The patient's voice was nasal and coarse.

Laboratory Studies. A white blood cell count was 10,700 per μl, with 65 per cent neutrophils and 35 per cent lymphocytes. Hemoglobin was 12.5 g/100 ml. The urine was normal on examination. Several cultures of the sputum produced no pathogenic bacteria. Roentgenograms of the chest revealed changes in the lower lobes of both lungs which were compatible with bronchiectasis (fig. 1). Dextrocardia was present, and fluoroscopic examination of the abdomen revealed situs inversus. Bronchoscopic examination revealed diffuse reddening of the trachea and larynx, and edema was noted throughout the whole bronchial tree. A large amount of greenish-yellow secretion was noted coming from almost all bronchial orifices, and especially from those of the lower lobes. A bronchogram revealed bronchiectasis in the right lower lobe, what would be the "right lingula" of the right upper lobe, in the left lower lobe, and the "left middle" lobe (fig. 2). The electrocardiogram was typical of dextrocardia (fig. 3). Roentgenograms of the sinuses

revealed a diffuse cloudiness of the ethmoids, antrums, and rudimentary frontal sinuses (fig. 4).

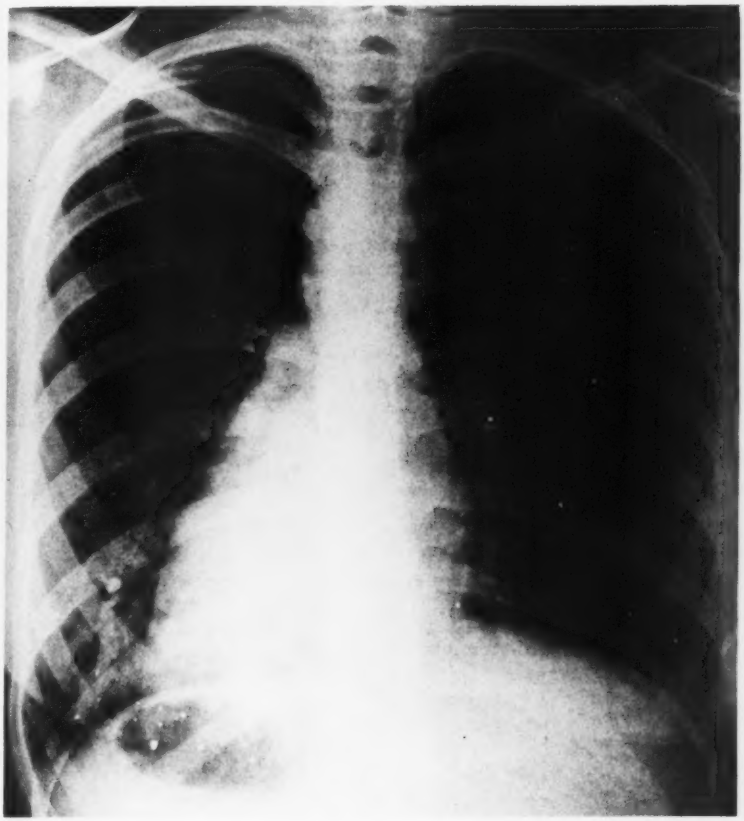

Figure 1. Roentgenogram of the chest showing dextrocardia.

Treatment and Course. The patient was treated with postural drainage for 10 minutes 4 times a day, 250 mg of Terramycin (brand of oxytetracycline hydrochloride) every 6 hours, Benylin Expectorant for cough, a nutritious diet, and other supportive measures. The amount of sputum decreased from two to three ounces daily to approximately one-half ounce daily while the patient was on this regimen; however, subcrepitant rales were still present in both bases on discharge. She has been followed as an outpatient with very little improvement in her condition. She has not co-operated very well in doing her postural drainage; however, no known acute infections have been noted since her discharge from the hospital on 24 August 1955.

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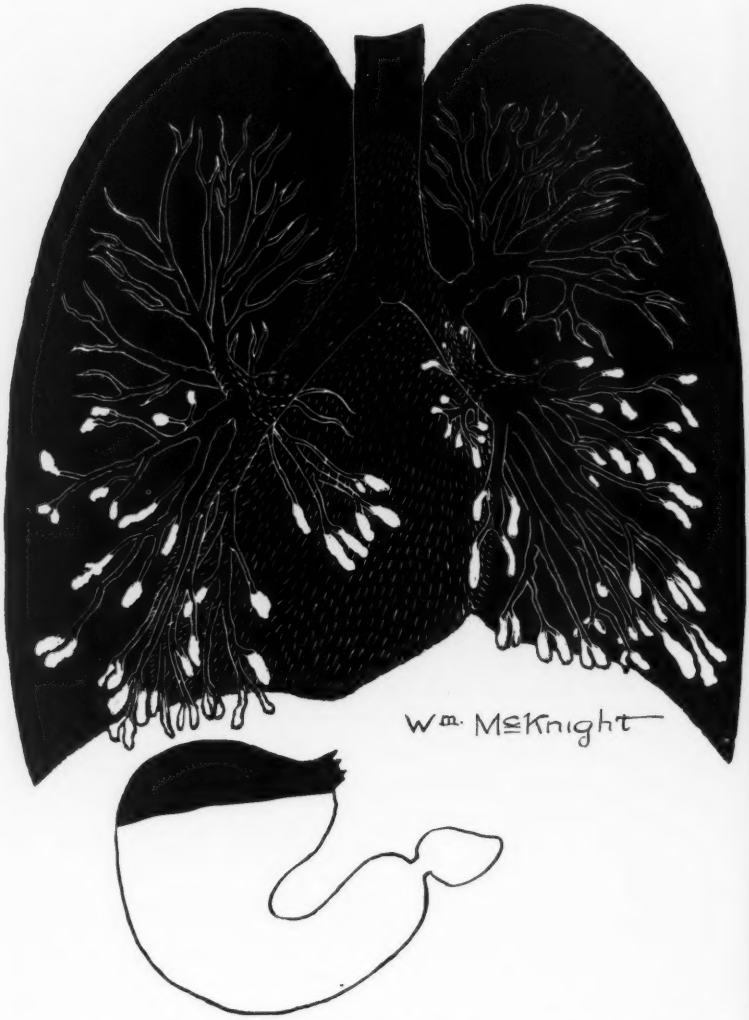

Figure 2. Diagram of bronchogram showing saccular bronchiectasis of the right lower, "right lingula" of the right upper, left lower, and "left middle" lobes.

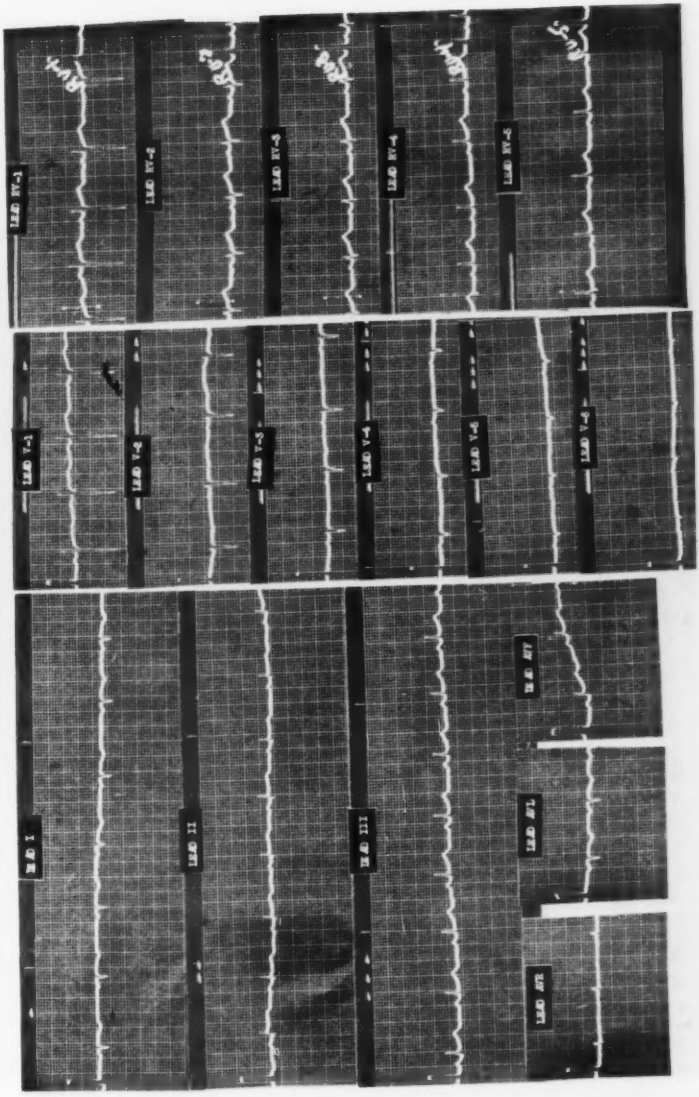

Figure 3. Electrocardiogram of patient with changes typical of dextrocardia.

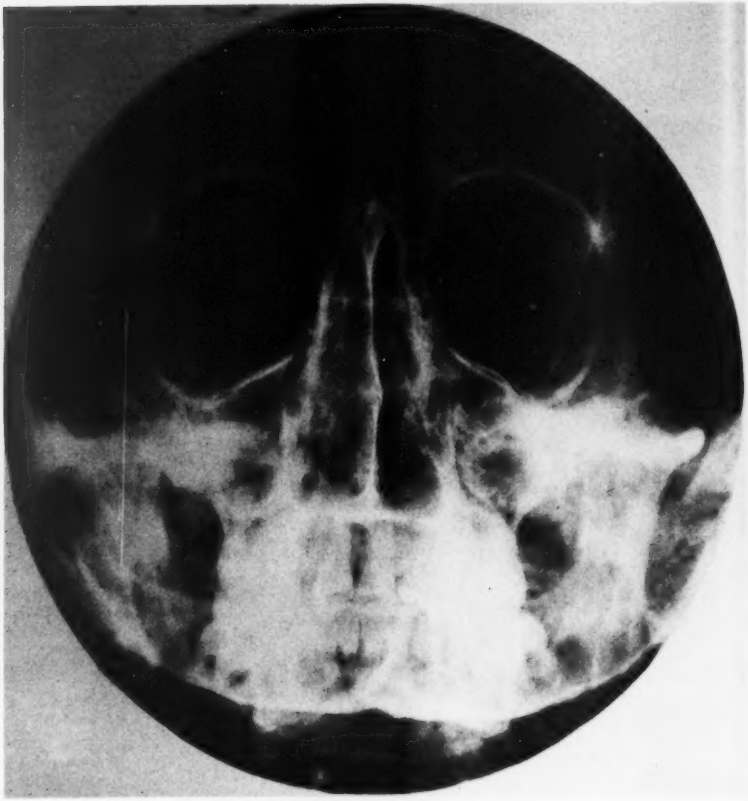

Figure 4. Roentgenogram of paranasal sinuses.

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A MESSAGE FROM THE A. M. A.

One of the most significant legislative proposals affecting the medical profession in recent years was signed by the President on 7 June 1956, thereby becoming Public Law 569 of the 84th Congress. This law authorizes the Federal Government to assume responsibility for the medical care of dependents of the uniformed services. Because of the law's importance and the many problems it poses for the medical profession, a brief review of the interest and activities of the American Medical Association concerning this subject is being reported this month as a matter of general interest to physicians.

In 1953 the Moulton Commission reported its findings and recommendations with respect to dependent medical care. The A. M. A. opposed the Commission's major recommendations, as well as the subsequent bills which were introduced to implement them. Briefly, the A. M. A. took its position on the grounds that the legislation would result in a big expansion of the military hospital establishment and the continuation of the doctor draft. In December 1954 the House of Delegates of the American Medical Association voted that, "If it is to be the policy of the Government to provide for medical care for dependents of service personnel, the services of civilian physicians and hospitals be used whenever possible, to be paid for at prevailing rates with provision for free choice of physician."

In 1955 Congress shifted its position and developed legislation emphasizing utilization of civilian physicians. In January 1956 witnesses testified on behalf of the American Medical Association before a Subcommittee of the Committee on Armed Services of the House of Representatives. These witnesses urged that if Congress saw fit to provide additional medical care to dependents "increased emphasis should be placed on the utilization of civilian facilities and the services of civilian physicians." It was pointed out, also, that such a program would reduce the requirements of the Armed Forces for physicians and obviate the necessity for any further extension of the "Doctor Draft Law." The Association, recognizing that many problems would necessarily follow the enactment of a program of this type, pledged its support and complete co-operation.

From the Council on National Defense of the American Medical Association. The views and opinions expressed are not necessarily those of the Department of Defense. —*Editor*

After the bill became law, the House of Delegates of the American Medical Association on 11 June 1956 adopted a resolution urging all medical associations to co-operate with the Department of Defense "in the provision of medical services to the dependents of servicemen . . . utilizing such insurance, medical service, or health plan or plans as encompassed by the law. A plan or program for any given geographical area should first be approved by the organized medical profession of that area . . . ." At the same time, the House also directed the Board of Trustees to initiate direct liaison with the Department of Defense and render all reasonable and effective aid and assistance to state and county medical societies toward implementation of the act.

Pursuant to this direction, the Board of Trustees thereupon appointed a special Task Force on Dependent Medical Care and a series of conferences between this Task Force and the special Task Force of the Department of Defense immediately began to iron out the many problems and issues involved in setting up the program.

On 28-29 July 1956, a meeting of representatives of constituent medical associations was called by the A. M. A., at which time the medical care program was discussed. At this meeting, held in Chicago, representatives from the Department of Defense outlined their plans and answered many questions. The conference recommended that the constituent medical associations (a) cooperate with the Department of Defense in promoting the program; (b) determine if they would prepare a schedule of allowances for the reimbursement of physicians for medical services, on a state or area basis; and (c) indicate preferences for the contracting agent and fiscal administrator.

Several meetings were then held by A. M. A. representatives and the uniformed services to consider the nature of the contract between the Government and the contracting agent and fiscal administrator. The A. M. A. endeavored to achieve acceptance of a contractual format which would be reasonable and protect the traditional physician-patient relationship. A. M. A. conferees also sought, particularly, to maintain local traditions and customs and promote a flexible program that could be activated without creating unnecessary problems. Following these meetings, draft copies of a contract were prepared and sent to all of the constituent medical societies on 16 October.

On 20 October, an office in the Main Navy Building at Washington, D. C., was assigned by the Army for use by the American Medical Association. For approximately one month, during the period of contract negotiations, representatives of the Association were available for consultation with representatives of the Armed Forces and the various constituent medical societies. Since the June 1956 meeting of the House of Delegates, the A. M. A.

Task Force and its special committee have maintained continuous contact with the appropriate committees of the uniformed services in an effort to promote the best possible implementation of the Dependents' Medical Care Act.

In its report to the House of Delegates on 27 November 1956, the Board of Trustees said, "It is obvious that this program through which the Federal Government is purchasing medical and hospital care from private sources for selected dependents of servicemen carries with it some danger to the private practice of medicine. Constant vigilance will be necessary to prevent any significantly adverse effect on the practice of medicine."

At its most recent meeting in Seattle, the House of Delegates recognized the assistance and efforts of the American Medical Association to the Federal governmental agencies and the state medical societies in the negotiations of contracts under the dependent medical care program and urged that this guidance continue in the future, so that problems between the Government and state medical societies may be resolved on an equitable and ethical basis.

The American Medical Association, throughout its dealings with governmental departments and medical societies on this important program, has been guided by the philosophical axiom, "Coming together is a beginning; keeping together is progress; working together is success."

DEATHS

BARHAM, Roy Irving, Lieutenant Colonel, MSC, USA, of Los Angeles, Calif.; stationed at U. S. Army Hospital, Fort Ord, Calif.; commissioned a Warrant Officer (junior grade) on 15 December 1942 and Second Lieutenant on 16 May 1943; died 10 December 1956, age 41, at U. S. Army Hospital, Ft. Ord, of carcinoma of the lung with metastases to brain and liver.

HOLLIS, George Beacham, Major, MSC, USAR, of Atlanta, Ga.; stationed at U. S. Army Hospital, Fort MacArthur, Calif.; commissioned a Second Lieutenant in the Army of the United States and ordered to active duty 25 November 1942; died 13 November 1956, age 44, at U. S. Army Hospital, Fort MacArthur, of coronary occlusion.

ROGERS, Owen Edgar, Lieutenant, junior grade, MSC, USNR, of New Braunfels, Tex.; stationed at U. S. Naval Hospital, Pensacola, Fla.; graduated in 1952 from Idaho State College and in 1954 from the University of Utah; ordered to active duty 16 August 1954 and commissioned an Ensign 15 December 1954; died 19 November 1956, age 26, at U. S. Naval Hospital, Philadelphia, Pa., of acute myelogenous leukemia.

THE WORLD-WIDE ROUNDS OF THE AIR FORCE PHYSICIAN

An oil painting depicting a flight surgeon as he makes his rounds somewhere in the Middle East was presented to Major General Dan C. Ogle, Surgeon General of the Air Force, on 12 December 1956. The painting, entitled "New Country Doctor Makes World-Wide Rounds," is one of a series used by Douglas Aircraft Company, Inc., Santa Monica, Calif., to stimulate the interest of young people in work being done by members of our armed services.

Left to right: General Ogle; Major General William H. Powell, Jr., Deputy Surgeon General, U. S. Air Force; Mr. L. E. Tollefson, Washington, D. C., representative of the Douglas Company, and his assistant, Mr. S. W. Cebuhar.

The message read in part: "U. S. servicemen—in their most remote arctic or tropic outposts—are often closer to medical care than their relatives in isolated areas back home, thanks to the work of Air Force aeromedical evacuation units. Trained medical personnel and equipment can be raced by air within hours to almost any spot in the world to treat or evacuate patients."

NEW AIR FORCE HOSPITAL IN LIBYA

The ever-expanding facilities of the Armed Forces overseas were highlighted on 17 November 1956 when the new 7272d U. S. Air Force Hospital was dedicated at Wheelus Air Base near Tripoli, Libya. By good fortune and good timing the dedication ceremony was graced by the presence of a dozen top-ranking military and civilian doctors who visited Tripoli on the final leg of a four-week nutrition study through 10 Middle and Near Eastern countries.

Nutrition survey group arrive in Libya for dedication of the new U. S. Air Force Hospital, Wheelus Air Base. From left to right: Colonel Herbert H. Kerr, USAF (MC); Major General James O. Gillespie, MC, USA; Dr. Frank B. Berry; Rear Admiral Bartholomew W. Hogan; Major General Harry G. Armstrong, USAF (MC).

Dr. Frank B. Berry, Assistant Secretary of Defense (Health and Medical), headed the group, and added one more hospital to the world-wide list of dedications in which he has participated as key speaker. He was introduced by Colonel Herbert H. Kerr, USAF (MC), Surgeon of the 17th Air Force, who also presented the Honorable John L. Tappin,

United States Ambassador to Libya, and Major General Harry G. Armstrong, Surgeon, United States Air Forces in Europe. Rear Admiral Bartholomew W. Hogan, Surgeon General of the United States Navy, and Major General James O. Gillespie, Chief of Professional Division, Office of the Surgeon General, Department of the Army, were present along with Dr. Richard A. Kern, Professor of Medicine, Temple University School of Medicine, Dr. Edward D. Churchill, John Homans Professor of Surgery, Harvard Medical School, and prominent members of the Interdepartmental Committee on Nutrition for National Defense.

The Honorable John L. Tappin, Ambassador from the United States to the Kingdom of Libya, speaking at the dedication of the new 150-bed U. S. Air Force Hospital at Wheelus Air Base, Tripoli, Libya.

The new hospital is a 150-bed, one-story structure adapted for Wheelus from standard plans developed in the Department of Defense. It is completely air conditioned and offers virtually all the latest diagnostic and treatment facilities. When fully staffed and tied in with a wide-spread air evacuation system, it will serve members of the U. S. armed services and their families from Morocco to the Burma border. Wheelus Air Base itself is the Headquarters of the 17th Air Force, which is charged with complete logistic support for this vast area. Comprehensive medical service is a major part of this mission.

OFFICERS CERTIFIED BY SPECIALTY BOARDS

Supplementary Listing

According to information from the Office of the Surgeon General, U. S. Air Force, the following regular Medical Corps Officers have been certified by the boards indicated since the listings published in previous issues of this *Journal*.

American Board of Pediatrics

Thomas M. Holcomb, Maj., USAF
Allen S. Weed, Maj., USAF

American Board of Orthopaedic Surgery

George H. Chambers, Lt. Col., USAF
James H. Dobyns, Maj., USAF
John A. Hennessen, Jr., Maj., USAF
John W. Payne, Maj., USAF

American Board of Dermatology and Syphilology

Henry L. Hines, Capt., USAF
Robert Levine, Maj., USAF

American Board of Radiology

Claude D. Baker, Maj., USAF
Neil E. Crow, Capt., USAF
Warren A. Nafis, Maj., USAF
Charles L. Randolph, Jr., Capt., USAF
Charles C. Watts, Jr., Maj., USAF

American Board of Urology

Ferris E. Cook, Jr., Maj., USAF

American Board of Obstetrics and Gynecology

Fred A. Heimstra, Col., USAF

American Board of Internal Medicine

Glenn D. Baird, Maj., USAF
James E. Cassidy, Capt., USAF
Richard H. Ferguson, Maj., USAF
James H. Hammond, Col., USAF
Donald M. Haskins, Maj., USAF
Nestor M. Hensler, Maj., USAF
Wilbur L. Kenoyer, Maj., USAF
Robert J. Soloman, Capt., USAF
Robert B. Stonehill, Maj., USAF

American Board of Pathology

Robert W. Morrissey, Maj., USAF

American Board of Surgery

Jack B. Jay, Maj., USAF
Alvin S. Natanson, Capt., USAF
Rhea S. Preston, Maj., USAF

American Board of Plastic Surgery

John K. Quinlivan, Capt., USAF

American Board of Preventive Medicine*

Public Health

Max B. McQueen, Col., USAF
Hugh W. Randel, Maj., USAF

Aviation Medicine

Louis B. Arnold, Col., USAF
Ferdinand Barnum, Maj., USAF
Bruce H. Bennett, Lt. Col., USAF
Jack Bollerud, Col., USAF
Franklin L. Bowling, Maj., USAF
John E. Boysen, Col., USAF
Thomas A. Collins, Lt. Col., USAF
John R. Copenhaver, Brig. Gen., USAF
Thomas H. Crouch, Col., USAF
James M. Davis, Lt. Col., USAF
Paul V. Davis, Lt. Col., USAF
William K. Douglas, Maj., USAF
James G. Espey, Jr., Col., USAF
George K. Fair, Col., USAF
Donald L. Ferris, Col., USAF
F. Whitney Hall, Col., USAF
Aubrey L. Jennings, Col., USAF
Andres I. Karstens, Lt. Col., USAF
William T. Kelley, Lt. Col., USAF
Paul H. Lance, Col., USAF
Stanley Lutz, Jr., Maj., USAF
Charles B. Marshall, Jr., Maj., USAF
Earl Maxwell, Brig. Gen., USAF
Charles K. Morris, Col., USAF
Harold A. Myers, Col., USAF
Sam E. Neely, Maj., USAF
Herman S. Parish, Jr., Maj., USAF
Joseph M. Quashnock, Maj., USAF
Hugh W. Randel, Maj., USAF
Burt Rowen, Lt. Col., USAF
Hartwin A. Schulze, Col., USAF
Samuel O. Smelsey, Lt. Col., USAF
Larry A. Smith, Col., USAF
Ralph E. Switzer, Col., USAF
Charles H. Talbot, Lt. Col., USAF
William R. Turner, Maj., USAF
Eugene E. Van Vranken, Maj., USAF
Henry C. Wallace, Col., USAF
Stanley C. White, Maj., USAF
Hayden Withers, Col., USAF

Board of Thoracic Surgery

(A Subsidiary Board of the American Board of Surgery)

Francis E. Foley, Lt. Col., USAF

*Certifications in Occupational Medicine were not available at press time and will be published in a later issue.

THE NPN TEST

No laboratory procedure should ever be considered as a routine measure. A nonprotein N or blood urea N test should be made on the blood of any patient who has albumin in his urine, progressive hypertension, evidence of arterial damage in his eyegrounds, or in any case of definitely enlarged prostate. Otherwise, this test should be done only when there is a definite indication that it might be of value in the patient's illness. In health examinations at yearly intervals, it may be done on the first examination, not repeated unless for definite reason.

—JAMES M. NORTHINGTON, M. D.
in *Clinical Medicine*
p. 11, Jan. 1955

MILITARY MEDICO-DENTAL SYMPOSIUM

The Fifth Annual Military Medico-Dental Symposium under the auspices of the Commandant, First Naval District, will be held at the U. S. Naval Hospital, Chelsea, Mass., and civilian institutions in Boston, Mass., 20 to 22 March 1957. The three-day program will have as its theme "The World-Wide Significance of the Preventive Aspects of Military Medicine and Dentistry."

The meeting on the first day will be conducted at the U. S. Naval Hospital. The second day, a tour of the School of Public Health of Harvard University will be conducted by Doctor John C. Snyder, Dean of the School, following which lectures will be given at the Jimmy Fund Auditorium. Lectures on the third day will be held at the Jimmy Fund Building, the Joslin Auditorium at the New England Deaconess Hospital, and the U. S. Naval Hospital.

Among the prominent guests and speakers on the opening day will be the Honorable Frank B. Berry, Assistant Secretary of Defense (Health and Medical); Rear Admiral Bartholomew W. Hogan, Surgeon General of the U. S. Navy; Major General Silas B. Hays, Surgeon General of the U. S. Army; Doctor Howard Root, President, Massachusetts Medical Society; Captain Shields Warren, MC, USNR, Professor of Pathology, Harvard Medical School; Doctor Chester S. Keefer, Director, Boston University School of Medicine, and Agnes Ohlson, R. N., President, American Nurses' Association. Captain R. Cannon Eley, MC, USNR, Chief of Isolation Service, Children's Hospital, and Assistant Clinical Professor of Pediatrics, Harvard Medical School, is serving as general chairman of the Symposium.

The Symposium has been approved for retirement point credit for those in attendance who are on the Active Status List in the Armed Services Reserve program, provided they register with the authorized military representative assigned the duty of recording daily attendance. Programs and additional information may be obtained by addressing the District Medical Officer, First Naval District, 495 Summer Street, Boston 10, Mass.

MEDICAL OFFICER ELECTED PRESIDENT OF BOARD OF PSYCHIATRY AND NEUROLOGY

Captain George Neely Raines, MC, USN, was elected President of the American Board of Psychiatry and Neurology during the annual meeting of the Board in New York, 9 to 11 December 1956. Captain Raines is the first military medical officer on active duty to be elected to this position. He served as a Director of the Board since 1949 and was its Vice President last year.

Captain Raines is on duty at the Bureau of Medicine and Surgery, Washington, D. C., as Head of the Neuropsychiatry Branch, and is Professor and Director of the Department of Psychiatry at Georgetown University School of Medicine.

Reviews of Recent Books

THE PRACTICE OF MEDICINE, edited by *Jonathan Campbell Meakins*, C. B. E., M. D., LL. D., D. Sc. 6th edition. 1,916 pages; 318 illustrations, including 4 in color. The C. V. Mosby Co., St. Louis, Mo., 1956. Price $16.

This sixth edition of Meakins' *Practice of Medicine* bears little resemblance to the preceding five editions. Whereas this book was previously produced by Dr. Meakins with a few chapters credited to four or five of his colleagues, the current volume represents a coordinated effort by 24 associate editors and 87 contributors from medical educational and research centers in 21 states and the District of Columbia, in addition to Montreal, Canada, and Cardiff, Wales.

The 214 chapters are organized into 22 sections, four of which pertain to specific infections due to bacteria, viruses, spirochetes, and rickettsiae. Included also are the chemotherapy of infection, the allergic states and diseases due to abnormal environment, and a final section on the psychosomatic aspects of medicine. Most sections are preceded by an introduction containing general facts and principles pertaining to all diseases in that group. Several sections (notably those on cardiovascular, renal, pulmonary, and hepatic diseases) devote considerable space to basic physiologic, chemical, and anatomic considerations that greatly enhance an understanding of the section as a whole.

Although the number of pages has been increased from 1,558 to 1,916 and illustrations reduced from 518 to 318, the presentation of many subjects is quite brief. This is no reflection on the quality of the book, but rather an indication of the great advances which have been made in our knowledge of medicine and the difficulty which coverage in any single volume entails. The greatest space is generally allocated to conditions of greatest frequency and importance. The illustrations included are excellent, the text is clear and readable, and the references, though restricted in number, are well chosen. This book is recommended as a valuable addition to the armamentarium of medical students, general practitioners, and internists alike.—*ALBERT A. BIEDERMAN, Col., MC, USA*

ANGIOCARDIOGRAPHIC INTERPRETATION IN CONGENITAL HEART DISEASE, by *Herbert L. Abrams*, M. D., and *Henry S. Kaplan*, M. D. A Monograph in The Bannerstone Division of American Lectures in Pediatrics, edited by *John A. Anderson*, M. D. 233 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1956. Price $11.75.

This publication is an excellent monograph in The Bannerstone Division of American Lectures in Pediatrics. The case material is drawn from a series of over 350 angiocardiographic and aortographic studies in

congenital heart disease, most of which examinations were performed in children under the age of three.

Part 1 summarizes the historical background of angiocardiography; the technics, contrast media, and roentgen equipment employed; reactions to angiocardiography; general principles of interpretation; and the role of aortography in diagnosis. Part 2 is divided into 27 sections, each dealing with one or more specific congenital anomalies. These sections stress particularly the interpretation of the differential diagnostic features apparent in contrast roentgen studies. No attempt was made to describe in detail the clinical, physiologic, pathologic, and surgical data except insofar as seemed necessary to clarify the angiocardiographic anatomy.

In each section variable emphasis is given to electrocardiographic and roentgenographic characteristics in addition to either angiocardiographic or aortographic findings. The book is profusely and adequately illustrated with excellent reproductions of angiocardiograms, which are accompanied in each instance by labeled, easy-to-read diagrammatic sketches. In the appendix there is a short, useful three-page reference table of differential diagnosis.

The authors have been unusually successful in their efforts to bring into focus the role of angiocardiography in congenital heart disease. They have accurately described and portrayed the diagnosic patterns, which have merged up to this time, in the summary of their and other's experiences in evaluating the usefulness of contrast roentgen studies in congenital heart disease. This book is highly recommended for inclusion in the library of all physicians interested in the diagnostic evaluation of congenital cardiovascular anomalies.—*GEORGE C. BESS, Col., USAF (MC)*

TREATMENT OF THE CHILD IN EMOTIONAL CONFLICT, by *Hyman S. Lippman*, M. D. 298 pages. The Blakiston Div., McGraw-Hill Book Co., Inc., New York, N. Y., 1956. Price $6.

Dr. Lippman has drawn upon more than 25 years of experience with disturbed children to write a book which will be of interest primarily to psychoanalytically oriented therapists. However, portions of his book may be recommended to a much broader audience.

In the section devoted to "approaching therapy," Lippman briefly describes the division of therapeutic labor among the members of the "psychiatric team" in a child guidance clinic. He gives a simple, straightforward exposition of the necessity for eliciting the co-operation of the family of the "emotionally conflicted" child in order to guarantee maximum effectiveness of therapy and minimum anxiety for the child. Pediatricians, teachers, personnel of juvenile courts, welfare agencies, and others whose duties require them to initiate or advise on referrals of children to guidance clinics will find this discussion of significant interest.

The second main portion of this book details a broad array of mental and emotional disturbances in children, with the primary emphasis

given to the treatment of the various well-chosen cases described. In addition, a brief, annotated bibliography devoted specifically to "the psychotic child" will be welcomed by readers especially interested in that subject. The chapters on "the psychopath" and "the neurotic delinquent" were especially impressive because of the author's manifest patience and optimism in approaching these vexing cases.

However, the reader who does not share Lippman's Freudian orientation will probably object strenuously to his apparently uncritical deification of the id-ego-superego trichotomy as though it were *factual* rather than *conceptual.* The book might have been greatly improved by occasional references to alternative and, at least, equally plausible explanations of the dynamics of the various emotional disturbances discussed.

The final portion of the book deals briefly with the problem of prevention and some principles of therapy, the latter section being somewhat hortatory, but justifiably and acceptably so.

One wishes that specific attention had been devoted to the widespread existing mental health education and information programs. Many of these programs, involving substantial investments, are devoted to fostering secure, healthful relationships within the family which Lippman describes as "the most valuable unit in any program for preventing emotional conflict in children."—*NORMAN A. HILMAR, Capt., MSC, USA*

UROLOGICAL SURGERY, by *Austin Ingram Dodson,* M. D., F. A. C. S., with nine contributors. 3d edition. 868 pages; 664 illustrations. The C. V. Mosby Co., St. Louis, Mo., 1956. Price $20.

The third edition of this book maintains the high standards set by the first two editions. In keeping with the rapid advances in urologic surgery, new and in general excellent material has been added on postoperative urinary incontinence, neurologic uropathy, stress incontinence in the female, and perineal prostatectomy. The chapter on the adrenal glands has been revised, as has the section on uretero-intestinal anastomosis. To make room for these revisions, certain chapters appearing in the second edition have been deleted without materially detracting from the over-all value of the book. These include the chapters on radiation therapy, acid-base balance, and blood transfusions. The latter two are included more appropriately in a section on pre- and postoperative care.

Although the book reflects a genuine attempt to maintain a degree of completeness and up-to-dateness which is all too often lacking in works of this type, criticism might be levied at the omission of a description of the transthoracic approach to the kidney, a procedure which would seem to be definitely entrenched in the surgical armamentarium, and of the use of isolated segments of small and large intestine as urinary conduits. The latter procedure, although admittedly a rather recent innovation, seems deserving of more than one or two sentences. The section on ureterocystostomy is excellent, but the Boari bladder flap procedure is not included. On page 61 appears the statement that, with

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presacral oxygen insufflation, "air embolism is almost unknown." This is misleading. The statement on page 731 that "very little, if any, pathologic change takes place in the undescended testicle before puberty" will certainly find dissenters.

Minor criticisms notwithstanding, this book is the most outstanding treatise on the subject in the English language. The printing, paper, and illustrations are excellent, and this volume should find a place of distinction on the bookshelves of all those engaged in surgery of the urinary tract and male reproductive system.

—HOWARD POLLACK, Capt., USAF (MC)

Proceedings of the Round Table on LYSERGIC ACID DIETHYLAMIDE AND MESCALINE IN EXPERIMENTAL PSYCHIATRY, Held at the Annual Meeting of the American Psychiatric Association, Atlantic City, N. J., May 12, 1955. Edited by *Louis Cholden*, M. D., Chairman. 85 pages; illustrated. Grune & Stratton, Inc., New York, N. Y., 1956. Price $3.

This 81-page monograph reports the panel discussions held on this subject at the 1955 Annual Meeting of the American Psychiatric Association. The participants represent some of the most fertile and imaginative research minds in the field of American and European psychiatry. Also included are the stimulating comments on mescaline effects by that erudite man of letters, Aldous Huxley. The focal point is the production of an artificial psychosis by means of LSD-25. The means by which such minute doses of this drug produces symptoms is discussed, and it is concluded that the resulting mental dysequilibrium is not simply due to its serotonin inhibitory properties, but may be mediated by enzymatic processes.

Dr. Paul Hoch contributes stimulating practical comments on the tranquilizing drugs, which with Sodium Amytal and Pervitin seem to afford symptomatic relief of the artificial psychoses induced by LSD. This leads to Max Rinkel's scholarly comments on the various chemical theories of the causes of schizophrenia and the possible roles of adrenalin metabolites, especially adrenochrome and adrenoxin. Adrenochrome is described as "the first substance thought to occur (naturally) in the body which has been shown to be a hallucinogen." Disturbances in the adrenalin cycle seem theoretically plausible, especially in view of the similar mechanisms found in phenyl-pyruvic acid oligophrenia, tyrosinosis, alkaptonuria, and albinism. The clinical uses of LSD are discussed from the treatment viewpoint by Dr. Sandison and Dr. Charles Savage for neurotic and psychotic patients.

This is a stimulating volume and should interest all clinical psychiatrists who desire to keep abreast of the current biologic theories of schizophrenia. It offers some rational basis for the effects of the now popular ataractic drugs in emotional disorders. Dr. Louis Cholden has done a signal service to researchers and clinicians in this field by his expert compilation and judicious editing, and those who knew him will be saddened by his untimely accidental death only a few months after he completed this monograph.

—JOHN P. McMULLIN, Capt., MC, USN

THE NATURE OF BRUCELLOSIS, by *Wesley W. Spink*, M. D., D. Sc. 464 pages; illustrated. The University of Minnesota Press, Minneapolis, Minn., 1956.

This book was engendered by a decision made in 1945 to study critically 100 bacteriologically proved cases of brucellosis and to follow the subsequent course of the patients.

After giving credit to many colleagues at the University of Minnesota and abroad, the author discusses all of the aspects of brucellosis of interest to physicians. Besides devoting chapters to the clinical features, he discusses historical, epidemiologic, bacteriologic, and other aspects. Pathogenesis and pathology are well described without excessive devotion to details of interest only to pathologists.

The author's great personal experience with brucellosis, together with his opportunities for observation in foreign countries and his knowledge of the vast medical literature, qualify him uniquely as an authority on brucellosis. His style is clear and although there is a slight amount of repetition, there is little redundant material.

Three appendixes giving reports of the U. S. Livestock Sanitary Association seemed unnecessary, but in general the book's contents are germane and logically presented.—*ROBERT J. HOAGLAND, Col., MC, USA*

ENDOGENOUS UVEITIS, by *Alan C. Woods*, M. D., with illustrations by *Annette Smith Burgess*. 303 pages; illustrated. The Williams & Wilkins Co., Baltimore, Md., 1956. Price $12.50.

The material of this book is presented under the headings of the different phases of the uveitis problem—classification, pathogenesis, pathology, diagnosis, and treatment—rather than as consecutive discussions of each individual clinical entity, since this is the sequence in which the problems of uveitis confront the student.

Methods used in diagnosis and treatment are described in detail; the illustrations are excellent, and the bibliography is adequate. This book is the most complete treatise in print today on endogenous uveitis and fills a real need of all practicing ophthalmologists. The section on the office management will be of inestimable value to the busy practitioner. The phenomenal growth in knowledge about uveitis will make this book a standard reference in all ophthalmic libraries.

—*KENNETH E. HUDSON, Lt. Col., MC, USA*

HUMAN OVULATION AND FERTILITY, by *Edmond J. Farris*, Ph. D. 159 pages; illustrated. J. B. Lippincott Co., Philadelphia, Pa., 1956. Price $6.50.

This text sets forth the record of years of hard, tedious, careful investigations regarding ovulation time in the human menstrual cycle. A new and apparently very accurate, simple test for determination of this exact date is outlined in clear, practical terms. Tables of results in actual fertility problems of patients who have successfully conceived healthy children are offered. Methods of study of barren couples, legal aspects of artificial insemination, and use of irradiation in an effort to

stimulate ovulation are all discussed quite clearly in this text. Many facts of this intricate problem are discussed freely.

This concise and authoritative text will be of value to specialists and general practitioners alike. Here is a practical method for calculating fertile days with greater accuracy than those used heretofore. The fine chapter, "Information of Value to the Barren Couple," will be of great aid to the physician in counseling his infertile patients.

This book is carefully documented and well worth careful study by all physicians interested in gynecology and obstetrics.

—ROY W. TANDY, Sr., Capt., MC, USN

BIOCHEMISTRY OF THE EYE, by *Antoinette Pirie,* M. A., Ph. D., and *Ruth Van Heyningen,* M. A., D. Phil. 323 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1956. Price $7.

This rather technical book presents a well-documented compilation of what is known of the detailed chemistry of the major portions of the eye. As the authors state in their preface, they have avoided details of subjects on which vast amounts of literature have already appeared; likewise, they have avoided areas in which little of the biochemistry is authoritatively known, such as tears, lids, lacrimal glands, conjunctiva, sclera, choroid, or optic nerve. Of the remaining functions of the eye, almost one half the space is allotted to the lens and its chemistry. Facts are stated and credits are given without a great deal of discussion. The authors fail to indicate how much of the reported work is their own. The extent of their contributions is reflected in the long list of references at the end of each chapter. Their modesty is commendable.

Lesser but adequate space is devoted to the biochemistry of the cornea, the retina, the vitreous, and the relationship between the aqueous humor and the ciliary body. A final chapter deals briefly with the tremendous subject of the effects of nutritional disease upon the eye.

That the book is intended for all physicians as well as ophthalmologists is evident. A glossary carefully defines "cataract," "macula," and a host of other obvious words. This, however, does not detract from the book. The manner in which this highly technical data is presented is most pleasing. In particular, I enjoyed the too brief chapter on chemical aspects of vision. The subject matter of the whole book was easy to follow, not technical beyond reason, and methodically presented. It is worth the time of everyone interested in ophthalmology.

—DAWSON A. MILLS, Capt., MC, USN

PLASTIC REPAIR OF GENITO-URINARY DEFECTS, by *George Bankoff,* M. D., D. Ch. 355 pages; illustrated. Philosophical Library, Inc., New York, N. Y., 1956. Price $17.50.

The title of this book is not descriptive of its contents, as the defects and anomalies of neither kidney nor ureter are considered, and surgical corrections of some diseases of the lower tract (*e.g.,* impotence, testicular tumors) are included.

The book is predicated on an excellent idea—the need of a handbook outlining genito-urinary defects, accompanied by a collection of the various successful surgical technics employed to correct them. However, authorship in a specialty field requires considerable technical experience in all areas covered, or collaboration with an expert in certain areas. The author, a plastic surgeon, apparently did not seek the collaboration of a urologist. The book would be strengthened by deletion of the redundant outline of basic anatomy and by omission of the section on sterility and impotence since the latter is not pertinent to the title.

The section on malformations and plastic repairs is a fair scanning of the many and better-known surgical technics described in correction of genital and lower-tract urologic defects and anomalies. The illustrations and reproductions range from fair to good, but the accompanying text often lacks clarity or correlation with the pertinent sketches.

This book, published in 1956, is based on a bibliography no later than 1948. Widening of horizons in plastic surgery since the advent of chemotherapy, with abolition of tuberculous ablations under streptomycin sulfate and modification of suture and tissue technics, has occurred in the interval. The necessity of editing and proofreading, especially by a urologist, is obvious when one finds the Torek technic for orchiopexy repeated several pages later under "cryptorchism."

—CHARLES W. HOFFMAN, Jr., Lt. Col., MC, USA

ESSENTIALS OF PSYCHOLOGY, by *Werner Wolff*, 2d revised and enlarged edition of *What is Psychology*. 385 pages; illustrated. Grune & Stratton, Inc., New York, N. Y., 1956. Price $6.50.

This volume is divided into 10 chapters covering the field of psychology, the areas of research, and the chief problems being dealt with by present-day workers in the field. Topics such as perception, retention, thinking, intelligence, emotion, personality, attitudes, and motivation are reviewed, their meaning in the study of man discussed, and the pertinent literature brought to the attention of the reader.

The volume provides an excellent analysis and synthesis of the problems facing psychology as a science compared to the problems facing the other sciences. However, the author's attempt to compress the field of psychology and pertinent research into an introductory volume has resulted in a vocabulary difficult for a beginning student.

The effort to present these studies within the framework of the developing science of psychology is skillful. The difficulties arising in psychology when the methods and restrictions of other sciences are foisted upon the studies of human behavior are discussed and well exemplified. Many highly considered theories are brought to the reader's attention by the author, and the evidence garnered as to the correctness of these theories is succinctly discussed. The book on the whole is interesting and useful for the serious young student of psychology who needs a general view of the field.—*PHILIP L. GOLDBERG, Capt., USAF (MSC)*

ATLAS OF EXFOLIATIVE CYTOLOGY, by *George N. Papanicolaou,* M.D., Ph.D. 230 pages of text; 26 full-page color plates; complete with loose-leaf leather binder. Published for the Commonwealth Fund by Harvard University Press, Cambridge, Mass., 1954. Price $18. Supplement 1, for insertion in 1954 Atlas. 50 pages of text; 17 full-page color plates. Published for the Commonwealth Fund by Harvard University Press, Cambridge, Mass., 1956. Price $4.

This important atlas of exfoliative cytology profusely illustrates normal and neoplastic cells from various secretory and excretory fluids of the body. It is in loose-leaf form which allows periodically the addition of new plates as they are published in this rapidly growing field.

It is a truly comprehensive approach to the study of cells exfoliated from the respiratory, digestive, urinary, and male and female genital systems; pleural, peritoneal, and hydrocele fluids; breast secretions and aspirations; and changes noted in cells from various metabolic and hormonal influences. The latter is illustrated, for example, by plates of normal and abnormal mitotic figures and cells from vaginal, cervical, and urine sediment smears in cases of pregnancy.

In Supplement I the plates show a comparative illustration of cells as seen in tissue sections and in smears. This brings out clearly not only similarities, but also marked dissimilarities between the cells in the two different preparations.

Another useful feature of the atlas is a description of the technical procedures used in obtaining and preparing smears from various sources. This will make the book valuable to the clinician as well as to the pathologist.—*VERNON E. MARTENS, Capt., MC, USN*

PROCTOLOGY, by *Harry E. Bacon,* M.D., Sc.D., LL.D.; *Stuart T. Ross,* M.D.; and *Porfirio Mayo Recio,* M. D., M. Sc. 441 pages; 228 illustrations and 5 plates in full color. J. B. Lippincott Co., Philadelphia, Pa., 1956. Price $10.

This concise, almost outline-type book is in reality a rewritten version of *Essentials of Proctology* by the senior author, originally published in 1943. The present authors have very carefully eliminated extensive and controversial material relating to etiology, history, pathology, anatomy, treatment, et cetera. In fact, no bibliography or reference to other authors is included. It is designed to be a quick-reference book primarily for medical students, interns, general practitioners, and busy practicing surgeons. To this end the authors succinctly accomplish their purpose in delineating the fundamentals of basic proctology.

Briefly, the essential anatomy and physiology are taken up, special examination procedures and laboratory tests are described; while anesthetic agents, pre- and post-operative treatment, and special nursing care are covered. The regional disease processes and their surgical treatment in both office and hospital are then described by chapters,

each factual, definite, and to the point. A special chapter on intestinal parasites by Samuel W. Eisenberg of the Department of Proctology at Temple University has been added, and although far from being all-inclusive, does cover the more commonly encountered parasites.

The authors are to be congratulated on setting down in such a clear, intelligent manner their extensive experience in the field of proctology.

—LESTER J. POPE, Capt., MC, USN

CLINICAL ORTHOPAEDICS, No. 7, "Tumors of Bone." *Anthony F. De Palma,* Editor-in-Chief. This number contains a special third section on "Motorist Injuries and Motorist Safety," by *Jacob Kulowski,* M.D. 354 pages; illustrated. J. B. Lippincott Co., Philadelphia, Pa., 1956. Price $7.50.

Anthony F. De Palma shows an unusual flair in assembling contributions outstanding both in scientific value and in reader interest.

The section on bone tumors includes essays by the world's leading authorities on the subject, such as Geschickter, Copeland, Jaffe, Stein, and others. While the material presented is not new, the presentations are concise, authoritative, well illustrated, and backed by survival statistics.

The section devoted to general orthopedics is composed of eight contributions. The general trend of this section is bolder, more experimental than the more orthodox attitude toward treatment of the bone tumors. Outstanding research reports are Cobey's search for nonallergic polymerizing plastic and Tucker's use of cultured calf bone in human bone grafts. Of clinical interest is a treatise from the Albert Einstein Medical Center on calcification of the intervertebral disk, disappearing, dormant, and silent.

The section on motorist injuries and safety is encouraging as it reflects the serious and systematic efforts of a team, including physicians, statisticians, and engineers, to find solutions to present problems and those in the future. The subject treatment is both thorough and concise. The bibliographies after each of the 18 separate chapters are exhaustive.

—ERNST DEHNE, Col., MC, USA

MUSCLE TESTING, Techniques of Manual Examination, by *Lucille Daniels,* M. A.; *Marian Williams,* Ph. D.; and *Catherine Worthingham,* Ph. D. 2d edition. 176 pages; illustrated. Format and test illustrations by *Harold Black.* Anatomical drawings by *Lorene Sigal.* W. B. Saunders Co., Philadelphia, Pa., 1956.

I have used the first edition of this book for many years and considered it to be the best text on the subject. However, I believe the second edition surpasses the 1946 one in many instances.

The material is presented simply and is readily understandable. The illustrations are most effective. "Positioning of a patient" gives the student an excellent illustration and guide of the proper way to position a patient. Also, in many illustrations throughout the book the patient is pictured with more support, which is much less startling to the patient;

therefore he is less apprehensive of trying to perform the desired exercise procedure.

The authors have added considerable valuable information to this manual. The facial muscles are excellently outlined. This feature was not available in the 1946 edition and is especially helpful to both the student and the physical therapist.

This manual is written in a clear, easy to read style. I highly recommend this text for teaching muscle testing and also feel that it would be an excellent reference source for all physical therapists.

—*MAURINE MECKES, Lt., NC, USN*

THE SPINE, Anatomico-Radiographic Studies, Development and the Cervical Region, by *Lee A. Hadley,* M. D. 156 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1956. Price $6.50.

This book is a well-written monograph discussing the embryologic development of the spine, various developmental disturbances that produce anomalies, certain conditions such as trauma and disease that cause abnormal anatomical variations, and the effects of disk degeneration. It deals primarily with the cervical spine with special reference to the differentiation between anomalies and the results produced by injuries, and the medicolegal implications thereof. Only brief mention is made of conditions found in the other regions of the spine. The text is concise and amply illustrated with well-chosen, good quality roentgenograms, micrograms, and photographs of living and cadaver specimens. It should prove of interest to the roentgenologist, orthopedist, and neurosurgeon.—*MALCOLM W. MASON, Capt., MC, USN*

PHARMACOLOCY AND ORAL THERAPEUTICS, A Textbook for students and Practitioners, by *Edward C. Dobbs,* D. D. S., F. A. C. D. 11th edition. 579 pages; illustrated. The C. V. Mosby Co., St. Louis, Mo., 1956. Price $9.

This is the 11th edition of a widely known text by an outstanding authority in the field of pharmacology. The introduction of many new drugs with the resultant improvement in therapy has promted the preparation of this new and latest edition. The title has been changed to emphasize the field of oral medicine, and the drugs are described to conform to the current revisions of the 15th edition of the *U. S. Pharmacopoeia* and the 10th edition of the *National Formulary.*

The text has been divided into two distinct categories: Pharmacology and therapeutics. In the first part, the drugs have been grouped into chapters representing anatomic and physiologic systems with a concise description of the anatomy and physiology of the system under consideration. The drugs are then described and correlated in accordance with their clinical indications and dosage. This section includes a rather detailed description of the types and pharmacology of various local anesthetics.

Part 2 is prefaced with an excellent chapter on prescription writing, rewritten to conform to the new nomenclature of the U. *S. Pharmacopoeia* and the *National Formulary*. The remainder is devoted to the treatment of the more common diseases encountered in the field of oral medicine. While the book is not a complete coverage of diagnoses and treatment planning, it is lucid, concise, and accompanied by excellent tables and prescriptions.

This volume should be used by the general practitioner as a refresher course in pharmacology and oral therapeutics and as a daily source of information in the use of new drugs and their therapeutic indication.

—*JOHN R. McEVOY, Lt. Col., USAF (DC)*

VENOUS RETURN, by *Gerhard A. Brecher, M. D., Ph. D.* 148 pages; illustrated. Grune & Stratton, Inc., New York, N. Y., 1956. Price $6.75.

This monograph presents a comprehensive account of Dr. Brecher's work and is an excellent historical survey of efforts preceding his own. The illustrations are profuse and excellent, and many are original. The author has applied synthetic and analytic approaches to the problem of venous return. This monograph is the only current one that gives a comprehensive analysis of the determination of venous return and its adaptation to cardiac output based on experimental measurements. It is excellent background material for surgeons and radiologists alike, particularly those doing thoracic or cardiac work. The author accomplishes this work by using completely modern equipment in testing his concepts. His final remarks are worth repeating: "The combination and integrated action of all factors—the ventricular injection, the respiratory pump, the systolic ventricular attraction, the recently demonstrated diastolic ventricular suction, the muscle pump and veno motor activity—widen the margin of safety which assures the adequacy of venous return under normal and abnormal conditions."

—*ARCHIBALD G. M. MARTIN, III, Maj., USAF (MC)*

STUDIES IN TOPECTOMY, edited by *Nolan D. C. Lewis*, M. D.; *Carney Landis*, Ph. D., D. Sc.; and *H. E. King*, Ph. D. 248 pages. Grune & Stratton, Inc., New York, N. Y., 1956. Price $6.75.

This monograph describes a series of studies done by the New York State Associates in Brain Research between June 1948 and April 1949. The general aim of the project "was the furtherance of the scientific evaluation of psychosurgery as a therapy, together with the accumulation in passing of whatever basic information might be gathered concerning the interrelation of frontal lobe brain structure and human behavior." Some 95 patients with various types of schizophrenic reactions were used for the study; 66 of these patients had one of two types of topectomy performed and the remainder (29) served as controls.

The discussion of this complex subject includes the surgical procedure, physiological effects, vestibular function, autokinesis, psychometric studies, complex mental functions, a time-sampling study of

activity, psychophysiology, sexual behavior, two independent evaluations of psychiatric effects, and social service studies. In short, under one cover is presented a host of multidisciplinary reports concerned with the same patient group. Each discipline "presents a more or less self-contained report" concerning the specific questions raised by the psychosurgical procedure. The chapters are clearly and excellently written, with adequate bibliographic material, and the volume has a better than average index which makes possible excellent cross reference between the disciplines concerned.

—*SAMUEL V. THOMPSON, Capt., MC, USN*

INTERNAL MEDICINE, A Physiologic and Clinical Approach to Disease, by *Robert P. McCombs,* M. D., F. A. C. P. 706 pages; illustrated. The Year Book Publishers, Inc., Chicago, Ill., 1956. Price $10.

This volume, which is handbook size, comprises a summary of the most important clinical facts, physiologic concepts, diagnostic methods, and therapeutic measures used in the study and management of internal diseases. The author states in the preface that the handbook size has been retained by avoiding duplication and eliminating detailed discussions of subjects that are primarily related to independent specialties. His aim is attained, and a very complete table of contents, reference bibliography for each chapter, and index with cross reference make the handbook readily usable in daily work.

The book is a useful, handy, and ready reference for the specialist in internal medicine and a valuable addition to the library of any practicing physician.—*WILLIAM S. GEORGE, Col., MC, USA (Ret.)*

NEW BASES OF ELECTROCARDIOGRAPHY, by *Demetrio Sodi-Pallares,* M. D., with the collaboration of *Royall M. Calder,* M. D. 727 pages; 520 illustrations. The C. V. Mosby Co., St. Louis, Mo., 1956. Price $18.50.

This is the English translation of the third Spanish edition of Dr. Sodi-Pallares' text. It brings together in one volume the author's views on many of the controversial principles of electrocardiography and summarizes the extensive experimental and clinical studies that have been conducted by the author and his associates.

The mathematical and electrical basic principles of electrocardiography are discussed in considerable detail as well as the experimental methods from which his conclusions are derived. One of the most valuable sections of the text for the clinical cardiologist is a summary of the careful correlative studies that have been accomplished relating electrocardiographic change and anatomic diagnosis in congenital heart disease. The author emphasizes the value of these changes in the differential diagnosis of congenital heart disease. Often they reflect the hemodynamic alterations more accurately than do the clinical and radiologic features. This is a complex technical work that is not designed to teach clinical electrocardiography to the average clinician. However, it is highly recommended as a valuable reference work for the investigator or advanced student of electrocardiography.

—*WELDON J. WALKER, Col., MC, USA*

ESSENTIAL UROLOGY, by *Fletcher H. Colby*, M. D. 3d edition. 656 pages; illustrated. Williams & Wilkins Co., Baltimore, Md., 1956. Price $8.

Attesting to the popularity of this book is the fact that this is the third edition to appear in the last six years. An attempt has been made to keep pace with the rapid advances in the field of urology. To a large extent, this has been very successful, although retroperitoneal pneumography is not discussed. There have been clarifying revisions in the field of urinary tract infections, including tuberculosis. As in the previous editions, the sections on anatomy and physiology are especially well done. The entire field of urology is covered in this book, which, of course, limits the exhaustiveness with which each entity can be covered. While the detail desired by the specialist is not to be found, the list of references is excellent. This makes the book of value to the specialist as well as to the student, intern, resident, and teacher.

The section on basic sciences as related to urology could be read with profit by all those preparing for their board examinations in urology. This is probably the best small book on urology in the English language.— *HOWARD POLLACK, Capt., USAF (MC)*

DERMATOLOGY, by *Donald M. Pillsbury*, M. A., D. Sc. (Hon.), M. D.; *Walter B. Shelley*, M. D., Ph. D.; and *Albert M. Kligman*, M. D., Ph. D. 1,330 pages; 1,117 illustrations on 564 figures. W. B. Saunders Co. Philadelphia, Pa., 1956. Price $20.

This integrated effort of three well-known dermatologists with varied and extensive experience in teaching, research, and clinical practice is novel and rewarding through its reflection of the combined years of experience represented. The result is not only an informative and authentic text but one with information which is conveniently accessible.

In addition to a lucid and rational preface (worth the reading) there are 13 chapters on applied basic principles of which the chapters on mycology and bacteriology of the skin are unique to this book. Another five chapters discuss allergy and hypersensitivity; four chapters are devoted solely to diagnosis, while three chapters are concerned with a discussion of therapy. This portion of the volume represents about 30 per cent of the work; the balance, or remaining 27 chapters, deals with cutaneous medicine (clinical dermatology). Throughout, the role of the skin as it reflects systemic disease is stressed, making the book of particular value to all practicing physicans as well as invaluable to the internist.

The discussion of principles of diagnosis constitutes an excellent exposition of differential diagnosis. The accompanying photographs admirably illustrate the differentiation necessary to make a diagnosis. The clinical section, more than conventional, includes all fresh and new material, with the chapter on dermatitis and eczema practically a classic. The discussion on therapy is outstanding in its clear-cut and no-nonsense evaluation, particularly in its account of adrenocortical preparations. The chapter on ionizing radiation is the first practical account

that I have run across. Its conservatism is laudable and the content completely adequate. The index of 48 pages is complete, yet not redundant.

The authors have indeed achieved their purpose in presenting dermatology in a new and readily acceptable form, free from obvious error or major controversy, simplified yet with full coverage, scholarly but not pedantic. Its boldness in deviating from past patterns makes it enjoyable to read and convenient as a ready reference.

—*ROBERT L. GILMAN, Capt., MC, USN*

THE LABYRINTH, Physiology and Functional Tests, by *Joseph J. Fischer*, M. D. 206 pages; illustrated. Grune & Stratton, Inc., New York, N. Y., 1956. Price $6.

This book fulfills a need which has been very evident for a long time. It is an eminently successful attempt on the part of the author to bring "organization out of chaos." The literature is replete with articles pertaining to theories, hypotheses, and clinical aspects of function of the labyrinth. The author states concisely the controversial theories and follows with clinical application of labyrinthine functions.

The complex subject of otoneurology and its numerous facets are dealt with in terms which are easily followed and understood. This material is concisely and accurately presented. The bibliography is voluminous and material well indexed for ready reference. This is an excellent book, which is especially designed for the resident in otolaryngology as well as the neurologist.

—*FRANK J. SHAFFER, Col., MC, USA*

DISEASES OF THE BREAST, by *C. D. Haagensen*, M. D. 750 pages; illustrated with 404 figures and 25 charts. W. B. Saunders Co., Philadelphia, Pa., 1956. Price $16.

The author is to be commended on a very readable and comprehensive test. Every conceivable aspect of disease of the breast appears to have been covered.

Worthy of special comment is the section on anatomy. Also, the surgical treatment of carcinoma of the breast is given careful treatment. The author's technic is clearly described in detail and well illustrated. In addition, the McWhirter method of simple mastectomy and the extended operations where the supraclavicular and internal mammary areas are attacked are thoughtfully considered and the pros and cons weighed.

The illustrations are generous in number and excellent in quality. The type is very readable but a little too small and closely spaced. There are numerous tables of a statistical nature which are properly included in a comprehensive text.

The medical student, the general practitioner, and the surgeon will all find here material for their particular needs.

—MAX L. SMITH, *Lt. Col., MC, USA*

DISEASES OF THE HEART, by *Charles K. Friedberg*, M. D. 2d edition. 1,161 pages; illustrated. W. B. Saunders Co., Philadelphia, Pa., 1956. Price $18.

The second edition of this well-known text contains a new section on the graphic methods of cardiac examination, consisting of discussions of roentgen examination, electrocardiography and vectocardiography, and ballistocardiography, phonocardiography, and cardiac catheterization. The pages are larger, and two columns per page have replaced the single column. Because of increase in size, there is about 25 per cent more material per page, and there are 80 more pages than in the first edition. Larger, bold-face print has been used for headings and subheadings.

By necessity the section on electrocardiography and vectocardiography is abbreviated, but it serves the useful purpose of orienting the reader to the author's opinions so that understanding of the other sections is facilitated.

Classical references have been retained, but bibliographies have been greatly expanded by the inclusion of many new references, including the 1956 literature, making this a truly up-to-date text. New illustrations have been added, and appropriate ones from the first edition have been retained.

The section on congenital heart disease has been extensively rewritten. For example, the section on atrial septal defect with mitral stenosis (Lutenbacher's Syndrome), which formerly occupied almost two pages, has been replaced by two sentences, indicating the rarity of this condition. The need for accuracy in diagnosis is stressed because of the availability of corrective surgery by new technics.

In the treatment of myocardial infarction, the author still recommends the time-honored method of bed rest. The "arm-chair" treatment and the misinterpretation of this method by some physicans to permit early ambulation is discussed. The author prefers the use of anticoagulants in all cases where no contraindication exists.

The chapter on bacterial endocarditis is completely and superbly written, as one would expect in view of the great experience and extensive publications by the author on this subject.

This is an excellent student textbook and is highly recommended to all interested in heart disease.—*SAMUEL H. SANDIFER, Lt. Col., MC, USA*

CLINICAL HEMATOLOGY, by *Maxwell M. Wintrobe*, M. D., Ph. D. 4th edition. 1,184 pages; 236 illustrations and 20 plates, 18 in color. Lea & Febiger, Philadelphia, Pa., 1956. Price $15.

Dr. Wintrobe has again demonstrated his ability to present a subject of vast ramifications in such a manner that technicians, students, teachers, and specialists can all reach for the same volume for clarification and guidance.

The main advances in hematology within the past few years have been clinically correlated by the revision of three chapters and the addition of two others (one on blood groups and blood transfusions and another on abnormal hemoglobin syndromes). In addition, 16 illustrations, 3 plates, 23 tables, and 1,600 references have been added. This has been accomplished with the addition of only about 30 pages, and has resulted in an improvement in organization and indexing. The practical clinical aspects of radioactive materials such as iron, vitamin B_{12}, and chromium have been integrated into this latest edition.

Emphasis on diagnosis and treatment, correlated with the practical application of the laboratory procedures involved, makes this present volume, as those in the past, a clinical text on hematology aimed at the practicing physician. The bibliographies for each chapter are noteworthy because of their completeness and current interest.

As with the previous editions, the book should be found on every medical library shelf that is frequented by clinicians. Every physician whose duties involve hematologic aspects of disease would find it a worthy and readable reference for his personal office library.

—*JULES J. McNERNEY, Lt. Col., MC, USA*

MEDICAL EFFECTS OF THE ATOMIC BOMB IN JAPAN, edited by *Ashley W. Oughterson,* M. D., and *Shields Warren,* M. D. Foreword by *Lewis L. Strauss,* Chairman, U. S. Atomic Energy Commission. 1st edition. National Nuclear Energy Series, Manhattan Project Technical Section, Division VIII, Volume 8. 477 pages; illustrated. McGraw-Hill Book Co., Inc., New York, N. Y., 1956. Price $8.

This book is one of approximately 60 volumes in the extensive documentation of the technical and scientific aspects of the atomic energy program during the operations of the Manhattan Project in the mid 1940's. The volumes written and still to be completed are entitled: *The National Nuclear Energy Series.* This particular book is a partial summary of the very large amount of data collected by the medical members of the Joint Commission for the Investigation of the Effects of the Atomic Bomb in Japan. The data was originally reported in a six-volume, paper-bound series in 1951.

Although many of the individual findings have been reported separately in the Japanese and American medical literature, this book summarizes pertinent findings in a well-oriented, readable style.

The essential findings are grouped under five chapter headings, including (1) Scope of Damage, (2) the Effects on Medical Care and Facilities, (3) Number and Types of Casualties, (4) Clinical Observations, and (5) Hematology and Pathology. Representative photographs, some in color, have been selected to demonstrate the clinical findings.

Unfortunately some of the historical aspects are lost through the omission of the original Japanese descriptions. While this book will be a valuable contribution to medical libraries, for detailed studies the student is referred to the original six-volume series.

—*JAMES B. HARTGERING, Lt. Col., MC, USA*

New Books Received

Books received by the *U. S. Armed Forces Medical Journal* are acknowledged in this department. Those of greatest interest will be reviewed in a later issue.

MEDICAL SCIENCES, Volume I, Series VII of Progress in Nuclear Energy, edited by *J. C Bugher, J. Coursaget,* and *J. F. Loutit.* 165 pages. McGraw-Hill Book Co., Inc., New York, N. Y., 1956. Price $6.

THE HAPPY LIFE OF A DOCTOR, by *Roger I. Lee,* M. D. 278 pages; illustrated. Little, Brown & Co., Boston, Mass., 1956. Price $4.

CLINICAL EXAMINATIONS IN NEUROLOGY, by Members of the Section of Neurology and Section of Physiology, Mayo Clinic and Mayo Foundation for Medical Education and Research, Graduate School, University of Minnesota, Rochester. Minn. 370 pages; illustrated. W. B. Saunders Co., Philadelphia, Pa., 1956.

AMINO ACID HANDBOOK, Methods and Results of Protein Analysis, by *Richard J. Block,* Ph. D., with the co-operation of *Kathryn W. Weiss,* A. B. 386 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1956. Price $10.50.

THE VISUAL FIELDS, A Textbook and Atlas of Clinical Perimetry, by *David O. Harrington,* A. B., M. D., F. A. C. S. 327 pages; 234 illustrations and 9 color plates. The C. V. Mosby Co., St. Louis, Mo., 1956. Price $16.

THE YEAR BOOK OF OBSTETRICS AND GYNECOLOGY (1956-1957 Year Book Series), edited by *J. P. Greenhill,* B. S., M. D., F. A. C. S., F. I. C. S. (Honorary). 592 pages; illustrated. The Year Book Publishers, Inc., Chicago, Ill., 1956. Price $6.75.

PRESCRIPTION WRITING AND MATERIA MEDICA FOR DENTISTS, by *L. Richard Cipes,* Ph. G., D. D. S. 4th edition. 624 pages; illustrated. Dental Items of Interest Publishing Co., Inc., Brooklyn, N. Y., 1956. Price $9.50.

ATLAS OF TUMORS OF THE NERVOUS SYSTEM, by *H. M. Zimmerman,* M. D.; *Martin G. Netsky,* M. D.; and *Leo M. Davidoff,* M. D. 191 pages; 277 illustrations, 233 in color, 4 tables. Lea & Febiger, Philadelphia, Pa., 1956. Price $25.

BONE STRUCTURE AND METABOLISM, CIBA Foundation Symposium, edited by *G. E. W. Wolstenholme,* O. B. E., M. A., M. B., B. Ch., and *Cecilia M. O'Connor,* B. Sc. 299 pages; 121 illustrations. Little, Brown & Co., Boston, Mass., 1956. Price $8.

POSTURAL AND RELAXATION TRAINING IN PHYSIOTHERAPHY AND PHYSICAL EDUCATION, by *John H. C. Colson,* F. C. S. P., M. S. R. G., M. A. O. T. 105 pages; illustrated. Charles C. Thomas, Publisher, Springfield, Ill., 1956. Price $2.50.

WIRE BRUSH SURGERY, In the Treatment of Certain Cosmetic Defects and Diseases of the Skin, by *James W. Burks, Jr.*, M. S., M. D. American Lecture Series, Publication No. 300, A Monograph in the Bannerstone Division of American Lectures in Dermatology, edited by *Arthur C. Curtis*, M. D. 154 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1956. Price $6.75.

ANESTHESIA FOR SURGERY OF THE HEART, by *Kenneth K. Keown*, M. D., F. A. C. A. American Lecture Series, Publication No. 304, A Monograph in The Bannerstone Division of American Lectures in Anesthesiology, edited by *John Adriani*, M. D. 109 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1956. Price $3.75.

FUNDAMENTALS OF PHYSICS AND APPLICATIONS, by *Howard O. Stearns*. 2d edition. 384 pages; illustrated. The Macmillan Co., New York, N. Y., 1956.

TRAINING OF THE LOWER EXTREMITY AMPUTEE, by *Donald Kerr*, B. B. A., and Signe Brunnstrom, M. A. Introduction by *T. Campbell Thompson*, M. D. 272 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1956. Price $6.50.

PERSONALITY, STRESS AND TUBERCULOSIS, edited by *Phineas J. Sparer*, M. D. 629 pages; illustrated. International Universities Press, Inc., New York, N. Y., 1956. Price $12.50.

PAPER ELECTROPHORESIS, CIBA Foundation Symposium, edited by *G. E. W. Wolstenholme*, O. B. E., M. A., M. B., B. Ch., and *Elaine C. P. Millar*, A. H.-W. C., A. R. I. C. 224 pages; 74 illustrations. Little, Brown & Co., Boston, Mass., 1956. Price $6.75.

GLAUCOMA, Transactions of the First Conference, December 5, 6, and 7, 1955, Princeton, N. J., edited by *Frank W. Newell*, M. D. Sponsored by the Josiah Macy, Jr. Foundation, New York, N. Y. Josiah Macy, Jr. Foundation Publication, New York, N. Y., 1956. Price $4.50.

DIAGNOSTIC METHODS IN VETERINARY MEDICINE, by *Geo. F. Boddie*, B. Sc. (Edin.), M. R. C. V. S., F. R. S. E. 4th edition. 412 pages; illustrated. J. B. Lippincott Co., Philadelphia, Pa., 1956. Price $6.50.

THE SEXUAL CRIMINAL, A Psychoanalytical Study, by *J. Paul de River*, M. D., F. A. C. S. 2d edition. 375 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1956. Price $6.50.

COSMETICS: Their Principles and Practices, by *Ralph G. Harry*, F. R. I. C. 786 pages; illustrated. Chemical Publishing Co., Inc., New York, N. Y., 1956. Price $17.

HOMOSEXUALITY: Disease or Way of Life? by *Edmund Bergler*, M. D. 302 pages. Hill and Wang, Inc., New York, N. Y., 1956. Price $5.

EXAMINATION OF THE NERVOUS SYSTEM, A Student's Guide, by *A. Theodore Steegmann*, M. D. 164 pages; illustrated. The Year Book Publishers, Inc., Chicago, Ill., 1956. Price $3.75.

ADMINISTRATIVE MEDICINE, Transactions of the Fourth Conference, October 31, November 1 and 2, 1955, Princeton, N. J., edited by *George S. Stevenson*, M. D. Sponsored by the Josiah Macy, Jr. Foundation, New York, N. Y. Josiah Macy, Jr. Foundation Publications, New York, N. Y. 1956. Price $4.25.

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